

# THE COMMERCIAL CAR JOURNAL

Entered as Second-Class Matter at the Post Office at Philadelphia, Pa.



*The first two 5-ton Peerless Trucks bought by the Columbia Contract Company, Portland, Oregon. Their performance has led to the purchase of seven other Peerless Trucks*

**B**ECAUSE of the powerful traction of the rear wheels, Peerless Motor Trucks have proved extremely efficient on the hills of Portland, Oregon.

The two Peerless Trucks illustrated above have been in service twenty-four hours a day, seven days a week, with drivers working in shifts.

Hauling materials from docks to construction-work in progress, their average daily mileage has approximated 115 miles.

The performance of these two trucks sold two other Peerless Trucks to the same Company, three to the Portland Sand Company; and two to the Portland Gas & Coke Company.

*Peerless* 3-Ton  
4-Ton  
5-Ton  
**MOTOR  
TRUCKS**

Correspondence with prospective users is invited—with the full assurance that purchase will not be recommended unless we are satisfied that Peerless Trucks will prove profitable to the user

Truck Department  
The Peerless Motor Car Co.  
Cleveland, Ohio

# KOEHLER COMMERCIAL CAR

CARRYING CAPACITY 1600 <sup>LBS.</sup> **\$750.**  
PRICE

## The Maximum and Minimum Car

No other delivery wagon can compare with the value, capacity and service which this car offers.

Here is the immensely important fact—1600 lbs. capacity, price \$750.



Various types of bodies are obtainable. The Panel Type B is an unusually handsome job. Price \$150 extra. Inside measurements 42 inches wide, 53 inches from floor to top, 84 inches back of driver's seat to rear. Canvas side body similar in appearance to Panel type B—\$50 extra.

### OPEN FLARE-BOARD TYPE

Large and Roomy—Inside measurements 44 inches wide, 84 inches back of driver's seat to rear, Flare-boards, 17 inches above floor. Strongly ironed throughout, also ironed to receive four-post canvas top, which can be had from stock at \$40 additional. Suitable for general express work.

CARRYING CAPACITY, 1600 LBS. PRICE, \$750. Prices of Various Types of Bodies Range From \$40 to \$150 extra.

The KOEHLER COMMERCIAL CAR was designed by and is built under the supervision of L. E. Schlotterback—the foremost commercial car designer. A man who has spent his professional life solving transportation problems.

The KOEHLER is a glutton for work. Built to withstand the most severe usage. Will take the punishment of 365 days' work a year without any trouble—a delivery car from the ground up—not a converted pleasure car.

### SPECIFICATIONS

**MOTOR:**—Two-cylinder, horizontal opposed, 4 cycle, 22-24 H. P. Bore  $\frac{5}{8}$  inches. Stroke, 4 inches. Lubrication mechanical and integral with motor. 300 miles one supply of oil.

**COOLING SYSTEM:**—Thermo-siphon through large pipes and large radiator at front of car. Piping and connection exceptionally heavy.

**IGNITION:**—Jump spark with strictly high-tension Bosch magneto.

**STEERING GEAR:**—Hewel pinion and sector type, 16-inch hand wheel.

**DRIVE:**—Motor in direct line with jack-shaft and immediately connected thereto by a universal joint.

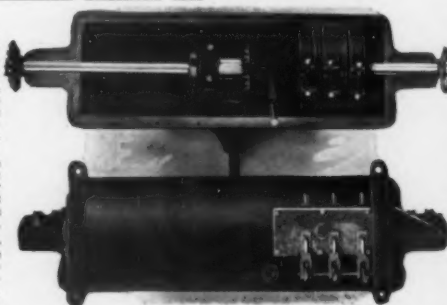
**TRANSMISSION:**—Planetary type. All gears of genuine chrome nickel steel hardened throughout, running with phosphorous bronze bearings on hardened and ground shafts in semi-steel casings. Transmission bands also of semi-steel which cannot slip or burn. High speed clutch, cone type, metal to metal running in oil.

**FRAME:**—A channel section steel frame "U" shaped, 3 x  $\frac{1}{2}$  inches, is continuous and extends at front of car, acting as bumper, protecting radiator and forward part of car.

**AXLES:**—Front axle,  $1\frac{1}{2}$  square, positively a one-piece drop forging with knuckle yokes integral. Rear axle, 2 inches square. Those experienced will appreciate these axle dimensions and the fact that neither axle is welded. Both axles are 40 pt. carbon steel.

**TIRES:**—Two inch solid rubber motor side wire. **WHEELBASE:**—85 inches. **TREAD:**—58". **SPEED:**—Four to sixteen miles per hour on direct drive. **FUEL CAPACITY:**—Gasoline 16 gallons; Oil, 1 gallon. Both gasoline and oil tank accessible under seat.

**SIMPLICITY:**—The KOEHLER COMMERCIAL CAR cannot be compared with the ordinary light delivery car. This car is designed to take the place of the one and two-horse vehicles and is so simple in operation that the drivers of the horse-drawn vehicle can successfully operate it.



### OIL TIGHT CASE

Transmission, differential and all gears and metal-to-metal clutch run in a constant oil bath—one of the greatest features ever put into any car at any price. One supply of oil to this case is good for 1000 miles.

Particularly adapted to all merchants—large and small. Dry goods, hardware, laundries, groceries, butchers, etc., etc.

### DEALERS

Territory is now being closed. Write for catalog and agency terms.

Address all Correspondence to 1709 Broadway, New York

H. J. KOEHLER S. G. Co. "BUILT IN NEWARK, New Jersey"

# THE PUBLISHERS' PERSONAL PAGE

"DO IT NOW!"

## Are You a User

of the most approved machine for delivering goods? Have you tried the effect that the use of commercial cars will have in your business?

If not, you are losing valuable time. "The proof of value is the use of the truck." Each month sees from 3 to 3500 more commercial cars in use, and each year the host of satisfied purchasers increases.

## If Any One Doubts

the hold which the commercial car has already taken upon the business world, a few facts will soon disabuse them of any pre-conceived notions or misconception of the true state of affairs. In both the electric and gas car field gains have been enormous, one salesman alone having sold during a single year practically a million dollars worth of electric commercial vehicles.

The growth is so rapid that the total number of trucks in use will in all probability be doubled this year.

## To Be Convinced

one has only to talk with any firm already users of a fleet of trucks. One statement alone stands out prominently. "We cannot do without

them." When asked what they would do if the trucks were not in existence, the answer is invariably, "We could not carry on the business we are now doing."

## Study Your Needs

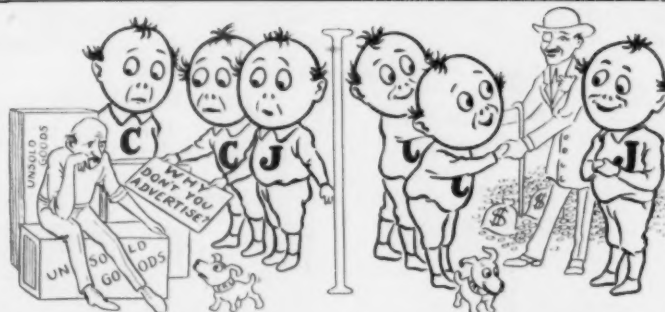
To successfully use cars it is necessary that the conditions of service be suited to the type of machine. The purchase of cars at

random, without definite knowledge not only of the attributes of the car, but of the needs of the delivery system, precludes the possibility of success.

Nowhere is, "an ounce of prevention worth a pound of cure," more true than it is in the installing and using of a fleet of commercial cars. Knowledge before purchase is worth many times the same knowledge after purchase. Knowledge before purchase may be had cheaply by simply reading existing mediums, published expressly for that purpose. Knowledge after purchase, is usually the result of bitter experience, and is, indeed, costly.

## Table of Contents

	PAGE
Advertisers' Index	60
Advantages of Steel Wheels for Heavy Commercial Cars— By A. W. Robinson	17
Among the Manufacturers	5
Commercial Car Expenses Small	54
Cost of Operating a Large Fleet of Electrics	37
Drilling Holes and Setting Posts With Motor Truck	58
Editorials	9
Electric Ambulances in Service in New York City—By Harvey Robinson	33
From Across the Water	42
Furniture Dealers and Storage Warehouses Quick to Appreciate Advantages of Trucks	11
Gasoline Engine Starters for Commercial Cars. A Review of the Automatic Engine-Starting Device Applicable to Commercial Cars—(Continued)	45
Hydraulic Five-Ton Car With Manly Hydraulic Transmission	21
Information Bureau	49
Instructive Experiences	40
Leading Lights of the Industry	19
Long Experience in Delivery Van Working, A. Fifty-Six Light Motor Trucks Replace About 450 Horses—By Our Foreign Correspondent	42
M & P One Thousand Pound Electric, The	36
New Commercial Cars	21
News of the Dealers and Garages	56
New Tower Wagons in Philadelphia, The	35
Poss Friction-Drive Half-Ton Delivery Car	26
Résumé of Brakes and Sprags Used on Commercial Cars, A—By C. T. Schaefer, Member Society of Automobile Engineers	50
Talks With Users	38
Truck Accessories and Appliances	30
Wichita Falls Commercial Cars for 1912	23



Your goods are good—but what of that?  
The buyer knows it not.  
To put him wise, just advertise,  
For that will help a lot.

And when you start we'll do our part  
Each day to make it pay.  
For we're not slow to let you know  
About the "CCJ."

And we suppose—as business grows—  
That you will thank us, too,  
For all the hints which—like the mints—  
Will coin good gold for you.

So now's the time, while in your prime,  
To act, and not to wait,  
And make your pile, for after while  
You'll find it is too late.

## Why Not Save

that trouble and expense by subscribing now for an up-to-date paper such as the COMMERCIAL CAR JOURNAL? Such a step you will never regret. The subscription is but \$2, which will be received in money order, check, or currency at our own risk.



# The Autocar



The Autocar in the Service of the Massachusetts Institute of Technology

## Selection

Economical operation and demonstrated merit are the reasons why 600 business concerns are using from one to seventy-four Autocars each.

Selecting a commercial car becomes a difficult task unless you know the car best suited to your particular needs—the car best qualified to stand up under the severest test your business may impose upon it. The Autocar has been the principal factor in establishing the motor vehicle for commercial purposes. Simplicity in design, constructed for lasting service, built from the ground up to withstand the severest test of hard daily use in every season of the year, has made the Autocar the choice of the country's leading merchants.

Write for list of users and Catalog No. 4C

**The Autocar Company, ARDMORE, PA.**  
Established 1897

*Sales and Service Buildings (Never Closed)*

PHILADELPHIA	NEW YORK	BOSTON
23rd and Market Streets	428-430 } W. 19th Street	Beacon Street—Commonwealth Ave.
	435-437 }	

Chicago, 918 S. Michigan Ave.	St. Louis, 4739 McPherson Ave.
Toronto, Bay and Temperance Sts.	San Francisco, 545 Golden Gate Ave.
Los Angeles, Main and Washington Sts.	Atlanta, Ga., 56 Magnolia Ave.

The Autocar in the United States Government's recent truck test covered 1509 miles, starting from Washington, through the South to Atlanta, thence to Indianapolis, through hub-deep mud, and almost impassable roads. The ONLY CAR to complete the run WITHOUT ANY MECHANICAL REPLACEMENTS.



Army type equipped with caravan body



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# The Commercial Car Journal

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VOLUME III

PHILADELPHIA, MAY 15, 1912

NUMBER 3

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## N. A. A. M. TO ESTABLISH A CIRCUIT OF LOCAL SHOWS FOR 1913

At the regular monthly meeting of the National Association of Automobile Manufacturers, probably the most important action was that in reference to the holding of local shows. Because of the fact that local shows have increased in number until they have caused too great a burden on the manufacturer, the N. A. A. M. has decided to take this matter in their own hands, forming a circuit embracing the principal cities throughout the country, and so arranging dates that the shows will not conflict, and that each show will be assured of a reasonable amount of co-operation on the part of the manufacturers. As has been the case heretofore, no manufacturer may take part in a local show, but in the event that his dealer takes space, he may contribute a car or a salesman and literature towards the holding of a show. The Show Committees of the various local trade organizations will be invited to the conference before the circuit dates are decided upon. It was also decided to organize a distinct electric vehicle section at the next Chicago Show, reserving ten of the choicest spaces in the First Regiment Armory for electric vehicles exclusively,—the allotment of space in this section to be made under the electric vehicle committee of the association. M. L. Pulcher, representing the Federal Motor Truck Company, was elected to membership.

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## S. A. E. SUMMER MEETING

The dates for the summer meeting of the Society of Automobile Engineers have been fixed for June 27, 28 and 29, at Detroit, Mich. The headquarters will be in the Hotel Pontchartrain. The committees in charge are:

Entertainment: H. E. Coffin (chairman), Hudson Motor Car Company; H. W. Alden, Timken-Detroit Axle Company; Russell Huff, Packard Motor Car Company. Finance: H. M. Leland (chairman), Cadillac Motor Car Company; Tracy Lyon, General Motors Company. Transportation: F. H. Floyd (chairman); E. E. Sweet, Cadillac Motor Car Company; H. R. Corse, Lumen Bearing Company. Hotels: G. W. Dunham (chairman), Chalmers Motor Company; F. H. Berger, Oakland Motor Car Company; J. G. Vincent, Hudson Motor Car Company.

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Chicago Automobile Trade Association has abandoned the idea of holding a fall show of commercial cars in the Coliseum building, but has applied for permission to hold an open air show the last week in August in one of the centrally located parks.

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Chicago Motor Club has postponed its commercial car reliability run until some time in the fall, the date for which has not been set.

## MANUFACTURERS INVITED TO EXHIBIT AT CONVENTION OF FIRE CHIEFS

The annual convention of the New York State Association of Fire Chief Engineers is scheduled to be held at Albany, N. Y., June 18th and 19th, 1912, but Henry Yates, secretary and treasurer of the association, writes us that the dates will probably be changed to June 20th and 21st. It is expected that about 150 fire chiefs and commissioners will be present.

Manufacturers of motor fire apparatus have been invited to exhibit their machines at this convention. Any manufacturers who have not received a special invitation to exhibit by letter, are hereby extended a cordial invitation to have their apparatus present. All accommodations will be furnished to those who attend by Chief Bridgeford, of Albany.

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## BOSTON COMMERCIAL CAR ASSOCIATION ELECTS OFFICERS

At the recent meeting of the Boston Commercial Motor Vehicle Association, the following Board of Directors were elected for the ensuing year: C. F. Whitney, Lippard-Stewart; J. W. Maguire, Pierce-Arrow; J. H. MacAlman, Stearns; E. A. Gilmore, Dayton; A. P. Underhill, Knox; J. S. Hathaway, White; A. T. Fuller, Packard; L. B. Butler, G. M. C., and Day Baker, General Vehicle. Mr. Baker was re-elected treasurer and C. I. Campbell, secretary. The question of the show for next year was discussed and referred to the Board of Directors.

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## WHOLESALE DRUG TRADE TO OBTAIN COMMERCIAL CAR DATA FROM CARS USED BY ITS MEMBERS

Members of the National Wholesale Drug Association, who are owners and users of commercial cars, have been requested by its secretary, J. E. Toms, to keep accurate statistics of their transportation costs. Chas. W. Whittlesey, chairman of the association's committee on transportation, has taken up the subject and will embody in his report at the annual meeting next October, the results obtained by commercial cars of various sizes and compare them with that obtained by horses. He suggests that the record be kept under the following headings, so the information will be in uniform shape for purposes of comparison: Capacity of trucks, tons and horse power; average daily run; gasoline per mile; oil per mile; average load; type of tire; tire expenses; comparison of total horse delivery account with motor expense.

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In the June issue of the CCJ we will publish articles giving figures and facts on the cost of hauling and other items incident to the use of commercial cars in the express and transfer business.

## N. A. A. M. ADOPTS STANDARD MOTOR TRUCK FRAME DIMENSIONS

### Schedule of Demonstration Charges Suggested

Standard widths and lengths of motor truck frames back of driver's seat were adopted at the regular monthly meeting of the Executive Committee of the National Association of Automobile Manufacturers, Inc., held in New York on May 1st, following a meeting of the Commercial Vehicle Committee held on Tuesday.

Two widths of frames—36 and 42 in.—were agreed upon, and 20 lengths, graduated by ft. and half ft., as follows:

Inches 48, 60, 72, 84, 96, 108, 114, 120, 126, 132, 138, 144, 150, 156, 168, 180, 192, 204, 210 and 216.

The object in recommending these frame dimensions is to provide standard widths and lengths toward which manufacturers can work with a view to providing for interchangeability of bodies on trucks of different makes and models in the future and to enable the body builder to make up stock bodies that can be delivered without delay and placed on any make of truck.

The desirability of such standards is shown by the fact that measurements of 88 different models by various manufacturers presented 19 different widths, from 28 to 46 in., and that upward of 100 models showed 41 different lengths of frame back of seat, from 48 in. to 218 in. By graduating the lengths by multiples of 6 in., from 4 ft. to 18 ft., it was found that these could be reduced to 20 lengths.

### Demonstration Charges

The Executive Committee also adopted a resolution recommending to members of the N. A. A. M. a schedule of charges for demonstrations as follows:

1/2	ton truck	\$10 a day
1	ton truck	\$10 a day
2	ton truck	\$15 a day
3	ton truck	\$20 a day
4	ton truck	\$25 a day
5	ton truck	\$30 a day
6	ton truck	\$30 a day
7 & 8	ton truck	\$35 a day
9 & 10	ton truck	\$40 a day



Truck in Torpedo Service

What is believed to be the only truck in a service of this kind, is a truck recently delivered to the Independent Torpedo Company, by the Adams Brothers Company, of Findlay, Ohio. While commonly known as a "stock wagon," the truck in question is used for the transportation of nitro-glycerine from one State to another, formerly being hauled overland by horse-drawn wagons. The chassis is a regular stock proposition, the only extra equipment being Swinehart Cellular Non-skid tires on all the wheels. The regular body is lined with a pan, in which rests a special body, fitted with compartments for holding the cans. This special or inner body is also fitted with a pan, which guards against any of the explosive getting into the running gears in case a can should spring a leak. This body loaded for a trip, has a capacity for hauling 720 quarts of nitro-glycerine.

## GRABOWSKY MOTOR TRUCK COMPANY IN FINANCIAL DIFFICULTIES

Grabowsky Power Wagon Company, Detroit, Mich., at a meeting of the creditors held in Detroit, April 23rd and 24th, decided to place its affairs in the hands of a creditors' committee appointed at the meeting, vested with full control of the corporation. The committee appointed consists of H. S. Firestone, president of the Firestone Tire & Rubber Company; B. F. Tobin, president of the Continental Motor Manufacturing Company; W. K. Prudden, president of the W. K. Prudden Company; W. H. Chapin, of the Brown-Lipe Gear Company; George H. Russell, president of the People's State Bank, and Bernard Ginsberg. The committee will immediately look into the affairs of the company, and will endeavor to formulate a plan to continue the business of the company. It may take thirty days to accomplish this. The committee has issued a statement asking all creditors to refrain from pressing all suits or claims in the meantime. It agrees to protect every creditor, and see that no one gets an advantage over another. Should any creditors press their claims, it will result in immediate liquidation, which would destroy the chance of all creditors getting their claims paid in full. Assets are given at \$1,250,000 and liabilities \$405,000.

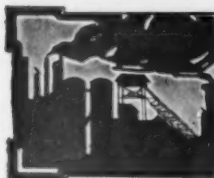
ROSE MANUFACTURING COMPANY'S Bill of Complaint against the Emil Grossman Company, Eclipse Specialty Company, National Sales Corporation, Motor Car Equipment Company and others for handling and manufacturing license pad holders, which were claimed to be infringements on their Neverout License Holder patents, has been dismissed by Judge Mayer, because of failure of the plaintiff to prosecute its case.

REO MOTOR CAR COMPANY, Lansing, Mich., advises us that the recent statement of litigation between The Owen Motor Car Company, of Detroit, Mich., and The Reo Motor Car Company, of Lansing, Mich., is erroneous. The suit is between The Reo Motor Truck Company and The Owen Motor Car Company, and is an attempt on the part of The Owen Company to collect for material consigned to the Reo Company.

The announcement has been made that a motor truck parade will be held in Newark, N. J., Saturday P. M., May 25th. While the parade will be under the auspices of the automobile dealers in Newark and vicinity, the details of the arrangements and the management will be left to Claude E. Holgate, 845 Broad Street, Newark, N. J., who has had considerable experience in the management of local motoring events. The Boost Newark Motor Truck Parade is in no way a contest, but is intended largely to be educational, to show to what extent power-propelled vehicles have supplanted horse-drawn ones. Entrance fee is \$3.

After struggling with many minor phases of the standardization problem, the Society of Automobile Engineers has now entered upon the boldest step of its career in undertaking a general ordering of the entire commercial vehicle situation.

The June issue of this paper will be devoted particularly to the express and baggage business as carried on by commercial cars.



## AMONG THE MANUFACTURERS



### A NEW MILLION DOLLAR ELECTRIC VEHICLE COMPANY

A new company, to manufacture electric vehicles with \$1,000,000 capital, has been formed in Buffalo, N. Y., under the name of The Buffalo Electric Vehicle Company. This company has purchased all of the capital stock of The Babcock Electric Carriage Company. The Clark Motor Company, The Buffalo Auto. Station Company and the Buffalo Auto. Carriage Company.

Its officers are Samuel J. Dark, president; A. A. Landon, vice president and general manager; H. Harry, treasurer; A. W. Thorne, secretary. All of these gentlemen are connected with large manufacturing concerns in the city of Buffalo. The new company will manufacture electric pleasure and commercial vehicles. It will operate one of the finest garages and service stations in Buffalo.

### NEW OFFICERS FOR THE GRAMM MOTOR TRUCK COMPANY

Following the purchase of a controlling interest in the Gramm Motor Truck Company by John N. Willys, of the Willys-Overland Company, an organization of the first named company has taken place. John N. Willys was elected president and general manager; B. A. Gramm, vice president and local manager; Geo. W. Bennett, treasurer; J. P. Kepplinger, secretary.

These officers, together with Max Bernstein, form the Board of Directors. H. L. Hook, formerly with the Willys plant in Toledo, has been appointed assistant general manager and has assumed charge of the Gramm plant at Lima. H. A. Goddard, general sales manager of the Gramm Company, has been retained and will make his headquarters at the Gramm plant.

### A NEW COMPANY TO MAKE ELECTRICS

The Atlantic Vehicle Company, 1600 Broadway, New York City, with factory at Oralon Street and Verona Avenue, Newark, N. J., has been incorporated with \$390,000 capital to manufacture electric commercial cars.

The officers of the company are: president, McKinley Boyle; vice president, Ralph Sanger; secretary, M. Black; engineer, Arthur J. Slade. It is understood that some very wealthy men are back of the company, and as Mr. Slade is one of the best informed engineers in the commercial vehicle line, this company is likely to be a factor in the trade. They will make a complete line of electric vehicles from one to five tons capacity, utilizing two brand new motors recently brought out by the General Electric Company.

### PEERLESS COMPANY EXPANDING

Peerless Motor Car Company, Cleveland, O., for the purpose of making enlargements to its plant has issued \$1,100,000 in 6 per cent. bonds, and \$300,000 of additional stock. The enlargements are particularly intended for the Motor Truck Department of the business.

### NEW OAKLAND COMMERCIAL CAR

Oakland Motor Car Company, Pontiac, Mich., has deviated slightly from the manufacture of pleasure vehicles, and has placed on the market a 1500-lb., 40 h. p. delivery car.

The new car has a 123-in. wheel base and a big powerful motor. Four of the first of these trucks to be manufactured are in daily use between the Oakland plant, at Pontiac and Detroit, a distance of 26 miles. Practically all of the material purchased in Detroit by the Oakland Company is carried to the Oakland plant on these four trucks.

### GRAMM TO START NEW COMPANY IN LIMA, WITH LOCAL CAPITAL

B. A. Gramm, formerly vice president of the Gramm Motor Truck Company, which recently passed into the control of the Willys interests, is to start another company in Lima, Ohio, the home of the Gramm, on local capital. This information comes from Mr. Gramm himself, who states that the venture will soon be under way.

DIAGONAL BLOCK TIRE COMPANY, Springfield, O., is building an addition to its plant.

SERVICE MOTOR CAR COMPANY, Wabash, Ind., has decreased its capital from \$500,000 to \$125,000.

B. F. GOODRICH COMPANY, Akron, O., contemplates establishing a fabric mill in conjunction with its tire plant.

RED SHIELD HUSTLER POWER CAR COMPANY, Detroit, Mich., has been sold out to the Auburn Motor Chassis Company, Auburn, Ind.

IDEAL MOTOR CAR COMPANY, Detroit, Mich., it is reported, will increase its capital stock to \$300,000, when it moves to Akron, O.

GOODYEAR TIRE & RUBBER COMPANY, Akron, O., is breaking ground for an addition to its plant, which will increase its facilities 20 per cent.

THE DORRIS MOTOR CAR COMPANY, St. Louis, Mo., is building a new factory at Sarah Street and Laclede Avenue, also a one story power house.

KILGORE MANUFACTURING COMPANY, Boston, Mass., makers of the Kilgore air shock absorber, has removed to larger quarters, 883 Boylston Street.

DURANT-DORT CARRIAGE COMPANY, Truck Department, Flint, Mich., are about to bring out a new four cylinder commercial car of 1½ tons capacity.

WAGENHALS MOTOR CAR COMPANY, THE, will erect a factory in Detroit, Mich., for the manufacture of Wagenhals three wheel light delivery wagons.

HENRY LEE POWER COMPANY, Chicago, Ill., has erected a three story building in West Ravenswood for the manufacture of Old Reliable Motor Trucks.

BOWER ROLLER BEARING COMPANY, Detroit, Mich., is erecting a new building to accommodate its office. This will give considerable more factory floor space.



THE FINDLAY MOTOR COMPANY, Findlay, O., (a part of the Ewing-American Truck Company) now in receiver's hands, will probably be reorganized by local capitalists.

ROSS GEAR & TOOL COMPANY, Lafayette, Ind., is building a new factory on North Eighth Street, particularly for the manufacture of steering gears for commercial cars.

EAGLE MANUFACTURING COMPANY, Appleton, Wis., who announced recently that they would build commercial cars, have changed their plans and will make traction engines only.

HAYES WHEEL COMPANY, Jackson, Mich., has established a new hub plant at Albion, Mich., for the manufacture of wood artillery hubs. The new plant is in charge of G. S. Porter.

GOODYEAR TIRE AND RUBBER COMPANY, Akron, O., at a meeting on April 10th, voted to increase its capital from \$6,000,000 to \$15,000,000 and distribute a stock dividend of 100 per cent.

HUPP MOTOR CAR COMPANY moved its entire plant from Jefferson Avenue, Detroit, Mich., to its new building four miles away, between Saturday noon and Monday morning by the aid of motor trucks.

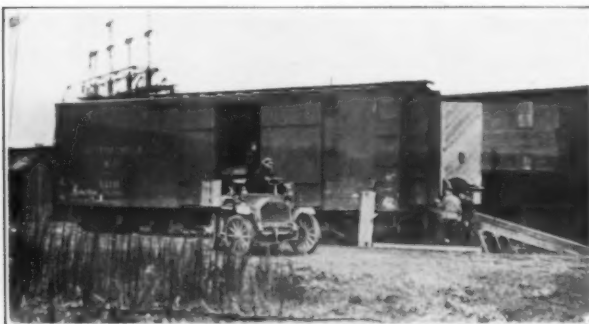
THE LANSDEN COMPANY has increased its capital stock to \$1,000,000 and will soon move into a new factory, where it expects to increase its output to 1,000 electric cars rating from 750 lbs. to 5 tons.

CROXTON MOTOR COMPANY, Cleveland, O., has made arrangements to build a new factory at Washington, Pa. The new building will be 120 x 600 ft., and will be devoted entirely to the manufacture of taxicabs.

SPAULDING MANUFACTURING COMPANY, Grinnell, Ia., large manufacturers of carriages, announces that it will manufacture light delivery motor cars, some of which have already been tried out and found to be successful.

ARGO ELECTRIC VEHICLE COMPANY, Saginaw, Mich., is building a four story addition to its factory, 150 x 150 ft., which will be ready by July 15th. This new addition will triple the output of electric commercial cars.

INTERNATIONAL MOTOR COMPANY is building extensive additions to its Plainfield, N. J., plant. These additions are to the main shop, erecting shop and store house, and will double the capacity for turning out Saurer trucks, which has been made necessary by the increased demand.



**Truck as Car Loader**

Another use has been found for that proverbial "experimental" car at the Federal Motor Truck Company, Detroit, Mich.; that is, as a "loader" of freight cars. Shown in the cut is a Federal one-ton experimental car which, with the aid of block and tackle, hauls the new trucks into the freight cars for shipment, these stacked in two tiers in some of the cars. It will be noticed in the illustration that a truck has been partly drawn up the incline to the proper loading tier. This scheme has worked out well and has saved time.

NEW YORK TRANSPORTATION COMPANY, New York City has been sold to the Connecticut Taxicab Company, of New York, which has been reorganized and combined with the Yellow Taxicab Company. Albert F. Rockwell, of the New Departure Company, is president, and Jesse Judson, assistant treasurer.

BARNSDALE AUTOMOBILE COMPANY, Superior, Wis., has been succeeded by the Continental Truck Manufacturing Company, with \$50,000 capital. The officers are E. M. Anderson, president, and E. G. Barnsdale, secretary and treasurer. The new company will manufacture one and three-ton trucks.

BILLINGS & SPENCER COMPANY, Hartford, Conn., well-known makers of forgings and tools, announce that they will market their products to the trade direct hereafter, having discontinued their arrangement with C. L. Barnes Company, manufacturers' agents, who formerly represented them.

MONITOR AUTOMOBILE WORKS, Janesville, Wis., has moved its general sales and publicity department to new quarters, at 1421 Michigan Avenue, Chicago, Ill. J. E. Norling, secretary and treasurer of the company, will manage this new office and will have F. W. Stewart, formerly with the Badger Motor Car Company, as sales manager.

GOPY ENGINE COMPANY, Cleveland, O., recently incorporated to manufacture the Goby slide-valve engine for the trade, will soon erect a new plant. The company is now occupying the building formerly used by the American Ball Bearing Company. Christian Girl is general manager.

A. O. SMITH COMPANY, Milwaukee, Wis., has adopted the name of Smith Milwaukee Truck Company, for the commercial car branch of its business and has moved the general offices of this branch of the business to 2328 Michigan Avenue, Chicago, Ill., where C. W. Babcock, manager of the department, will make his headquarters.

D. F. POYER COMPANY, Menominee, Mich., maker of the Menominee Commercial Car, has secured the Andrew Gram factory building in its town which will more than triple its facilities, the building being three stories, 130 x 60 ft. The Company has orders on hand for 300 of its one ton cars.

T. W. WARNER COMPANY, Muncie, Ind., is making extensive additions to its plant, the new buildings being of brick and steel construction. The company will manufacture a considerably enlarged line of transmissions, steering gears, and control levers for both pleasure and commercial cars.

PAN-AMERICAN MOTOR CAR COMPANY, Polk and McAllister Streets, San Francisco, Cal., has just been organized with C. T. Ryland, as President, and Captain F. C. Cole, as Vice-President, also J. A. Hill, R. E. Chapman and T. B. Dozier. The new Company succeeds the Moon Company's Branch, and will also handle Commerce and Universal Trucks.

JOHNSON SERVICE COMPANY, Milwaukee, Wis., at its annual meeting elected H. W. Ellis, President and General Manager, succeeding Prof. W. S. Johnson, whose death was recently announced. C. F. Johnson was elected Vice President, and P. T. Johnson, Secretary and Treasurer, the two latter being sons of Professor Johnson. The following additional directors were also elected: H. J. Upham, George P. Miller, Clement Smith, A. E. Henry and B. T. Voute.

Next month this journal will contain among a lot of other good things, special articles on cost and operation of commercial cars used by large express companies and small concerns that do local hauling.

## New Commercial Cars and Parts

CRAM & SOVEREIGN, Geneva, N. Y., will manufacture a 1500 lb. light truck.

OAKLAND MOTOR CAR COMPANY, Pontiac, Mich., is building thirty commercial cars.

OMAHA MOTOR CAR COMPANY, Omaha, Neb., a \$1,000,000 corporation, will make commercial cars of all sizes.

POWELL ENGINE COMPANY, Brooklyn, N. Y., has brought out a commercial car with a removable power plant.

MARKEY MANUFACTURING COMPANY, Mt. Clemens, Mich., is putting out a three-ton, four wheel drive commercial car.

LEITNER MOTOR CAR COMPANY, Kenton, O., has started a factory on W. Franklin Street, employing 25 men in the production of motor cars.

WHYLAND-NELSON MOTOR CAR COMPANY, Buffalo, N. Y., proposes to establish a factory at Batavia, N. Y., for the manufacture of motor trucks.

LAMBERT-MORIN MOTOR VEHICLE COMPANY, Lawrence, Mass., are manufacturing electric commercial cars, which are the result of three years of experimentation.

UNIVERSAL MOTOR TRUCK COMPANY, Detroit, Mich. A new six-cylinder Universal commercial car will be put on the market by Walter Flanders and his associates.

AUBURN AUTOMOBILE COMPANY, Auburn, Ind., is building a 1500 lb. light delivery car, equipped with a two cylinder, 24 h. p. motor. It is also building a new six cylinder model of touring car.

UNITED STATES LIGHT & HEATING COMPANY, New York City, has acquired exclusive right for manufacture and sale of Eveland electric self-starting and lighting device for autos and commercial vehicles.

JACKSON AUTO. COMPANY, Jackson, Mich., is bringing out a 30 h. p. light motor delivery car equipped with solid tires. It is stated that a special construction of this car makes pneumatic tires unnecessary.

CLEVELAND-GALION MOTOR TRUCK COMPANY, Galion, O., has been formed with \$500,000 capital, by the consolidation of the Howard Motor Company and the Cleveland Motor Truck Manufacturing Company.

SIGMUND AUTO TRUCK COMPANY, Milwaukee, Wis., has been incorporated with \$50,000 capital to manufacture commercial cars. The incorporators are Frederick F. Gease, Albert Brandenburg and Robt. M. Sessions.

KADIX-NEWARK TRUCK COMPANY, East Orange, N. J., has been organized by C. F. Kallberg, and L. L. D'Ann, of East Orange, and R. M. Colborn, of Newark, with a capital of \$200,000, to manufacture motor trucks.

BUCKEYE MANUFACTURING COMPANY, of Anderson, Ind., maker of the Lambert motor truck, will establish a factory at Los Angeles, Cal., for the manufacture of a new style, three-wheel orchard tractor, to be known as the Lambert.

KILGORE MANUFACTURING COMPANY of 883 Boylston Street, Boston, Mass., maker of the well known Air Shock Absorber, announce a new improved Shock Absorber built especially for heavy trucks. This is a somewhat larger size than its regular pattern.

GENERAL MOTORS TRUCK COMPANY, Detroit, Mich., has brought out a new type of sightseeing car, which it built along pleasure car lines. The seats are so arranged as to comfortably care for sixteen people and does not have the noticeably objectionable appearance which the ordinary sightseeing cars have.

TWYFORD AUTO MANUFACTURING COMPANY, Houston, Tex., recently organized and has purchased 30 acres of ground at South Houston on which is located a machine shop large foundry building, equipped with excellent machinery, also a handsomely fitted office building. The company will build commercial cars.

WESTERN AUTO BODY & MANUFACTURING COMPANY, Los Angeles, Cal., has built a 90 h. p. double deck motor omnibus for the U. S. Grant Hotel, San Diego, Cal. It has a seating capacity for fifty passengers, and its wheel base is 192 in.; length of the machine over all is 28 ft. If this bus proves a success, there will be a number of them built.

MOTOR TRUCK BODY COMPANY, Detroit, Mich., is bringing out a new body for commercial cars which is a combination passenger and express body. It has a seating capacity of thirty-two, the tops of which are removable, converting the whole car in a few minutes from a passenger to a freight carrier, or a part of the seats can be removed so that it will carry both passengers and freight at the same time.

CINCINNATI MOTORS MANUFACTURING COMPANY, Cincinnati, O., whose organization we mentioned in our last issue, has elected the following officers: president, Franklin Alter; vice president and general manager, H. T. Alter; treasurer, J. B. Doan. The company will manufacture the Alter commercial cars, of which 25 are now under way. F. Alter is president of the American Tool Works Company, of Cincinnati, O., and is connected with a number of banks and other industries in the city. Mr. Doan is vice president and general manager of American Tool Works Company. The new company expects to build a large plant this summer and will undoubtedly be a considerable factor in the commercial car field.

### WILL INAUGURATE CO-OPERATIVE DELIVERY

**Cleveland Chamber of Commerce is Behind Scheme Which Will Benefit the Smaller Stores**

Co-operative parcel delivery which will benefit the smaller stores whose facilities are at present inadequate, is planned by the Cleveland Chamber of Commerce. Thomas Cedric Wellsted, assistant secretary of the Chamber of Commerce, has been thoroughly investigating the subject and would be glad of any suggestions regarding the matter.

Fifteen cars are to be used, twelve of which will be of one ton capacity while the pick-up cars will be of one ton or ton and a half capacity. The system is being so laid out that the entire city of Cleveland, which covers a vast territory by the way, will be well cared for.

An experienced manager will be placed in charge of the service and a central station will be established. The pick-up cars will deliver the parcels to the main base from which point they will be sorted out for the various route cars.

It is planned to begin operations in about two months.

## PERSONAL MENTION

W. F. REYNOLDS has been appointed sales manager of the Lippard-Stewart Motor Car Company, Buffalo, N. Y.

WILLIAM E. KENYON has been appointed central district manager for the Poss Motor Car Company.

GEO. W. FRIEND, formerly with Mitchell Motor Car Company, is now with M. & P. Electric Vehicle Company.

F. J. POSTA, formerly with The Kissel Motor Company, is now general manager of The Harder Auto Truck Company, Chicago, Ill.

H. E. PARTRIDGE, formerly with the Boston branch of the Ford Company, has been placed in charge of the Buffalo branch of that company.

L. A. BARTLETT, formerly with the Grabowsky Power Wagon Company, is now in the Sales Department of the Poss Motor Company, Detroit, Mich.

G. T. HOMEIER, formerly with the General Motors Company, has been appointed superintendent of the Streator Motor Car Company, of Streator, Ill.

C. M. STREIBE, Chicago, Ill., of the Chicago Studebaker Corporation, has been appointed retail sales manager of the Omaha branch of this company.

W. J. TEAGAN, manager of the Goodyear Tire Company's Boston branch, is now district manager of New England, C. M. McCreery filling his vacancy.

MORRIS GRABOWSKY, New York City, vice president Alden-Sampson Company, has resigned from this company, and has made no plans for the future.

E. W. CONKLING, formerly of Studebaker Company, has taken charge of the production department of Bower Roller Bearing Company, Detroit, Mich.

H. A. WORMAN, Cleveland, O., formerly advertising manager of National Carbon Company, is now advertising manager of the Baker Motor Vehicle Company.

JAMES J. FLYNN, Washington, D. C., formerly with the Zell Motor Car Company, is now manager of the Locomobile Company of America's Washington branch.

BENJ. F. BOARD, president of the B. F. Board Motor Truck Corporation, Alexandria, Va., committed suicide on March 19th, while suffering from a nervous breakdown.

H. L. McCLAREN, Los Angeles, Cal., formerly western representative for Morgan & Wright tires, is now assistant to the central district manager of this company, Chicago, Ill.

D. E. WHIPPLE, of Anderson Electric Car Company, Detroit, Mich., has been transferred from the factory force to the management of the Chicago and Evanston, Ill., branches.

F. E. BRADFIELD, formerly with the Velie Company in Chicago, Ill., has been appointed manager of the New England branch of the Velie Motor Vehicle Company, of Boston Mass.

CHARLES A. MALLEY, Detroit, Mich., who resigned from the King Motor Car Company, Detroit, Mich., has taken the agency for the Universal Truck, and will open a salesroom in Boston.

J. J. GORMLEY, well known in automobile trade circles, is now manager of the commercial car department of Myer Abrams & Company, Boston, Mass., agents for the Lauth-Juergens cars.

W. J. ST. ONGE, formerly with the Dean Electric Company, Elyria, O., has been appointed advertising manager of the Anderson Electric Car Company, Detroit, Mich., succeeding Hal Smith.

C. W. GARRATT, formerly with the American Radiator Company, also United States Heating Company, has been elected secretary and treasurer of the Federal Motor Truck Company, Detroit, Mich.

W. S. JEWELL, Springfield, O., formerly with the Kelly Motor Truck Company, has been appointed eastern sales manager of the R-C-H Corporation, with headquarters, 1989 Broadway, New York City.

R. H. CRONINGER, of the Speedwell Motor Car Company, has been installing auto-truck lines between mines and stations out in California where the low grade of ore makes hauling by wagon too expensive.

P. J. POLLACK, formerly local manager of the Brush, has been appointed local manager of the Alden-Sampson division of the United States Motors Chicago Company, with M. D. McNab, 18th and Michigan Avenue.

F. A. BABCOCK, Minneapolis, Minn., has been appointed manager of R-C-H Corporation sales for the territory comprising Minnesota, North Dakota, Montana and northern Wisconsin, headquarters Minneapolis, Minn.

A. D. FROST, formerly in charge of Alco city sales, is now manager of the New York branch, 1886 Broadway, and will also supervise the service department of the American Locomotive Company, Jackson Avenue, Long Island City, N. Y.

JAMES J. MCCARTHY, 171 Fifth Street, Providence, R. I., has resigned his position as foreman of the American Locomotive Company's plant, to accept a position with the General Motor Truck Company's Rapid plant, Pontiac, Mich.

JAMES A. BRADEN, the well known advertising manager of the Diamond Rubber Company, Akron, O., has resigned on account of ill health. He has been succeeded by C. S. Thompson, formerly with the Fowler-Simpson Advertising Agency.

W. H. CAMERON, formerly engineer of the Overland Motor Car Company, of Toledo, O., and recently with the Flanders Manufacturing Company, with whom he signed but a short time ago, resigned recently to consider other propositions.

CHAS. ABRESCH, president and treasurer of the Chas. Abresch Company, Milwaukee, Wis., manufacturer of commercial motor cars, died on April 28th, after an illness of several months. Mr. Abresch has been in the wagon and automobile building business for many years.

A. F. MAIS, the well known truck engineer, who is now at the head of the manufacturing branch of the Studebaker truck department, is authority for the statement that that company is preparing to build 2500 one-ton trucks during the coming year, also a number of three-ton trucks, and later on will add five and seven-ton models.

T. W. WARNER, president of the Warner Manufacturing Company, Toledo, O., and also president of the T. W. Warner Company, of Muncie, Ind., advises us that the statement that he is about to remove to Muncie is not correct. He is building a residence in Toledo, and will make Toledo his permanent home.



# THE COMMERCIAL CAR JOURNAL

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## THE COMMERCIAL CAR SHOWS AND COMMERCIAL CAR MANUFACTURERS' ASSOCIATION

We have had a great deal of correspondence with the commercial car manufacturers regarding a separate commercial car show, and a separate organization of commercial car manufacturers as advocated in our March Number, and we can now give our readers some idea as to how the trade as a whole looks upon these matters.

Of the manufacturers heard from, 67% or about two-thirds, favor a separate commercial car show held in the Fall. 24% favor the show held in conjunction with the pleasure car show, as has been the rule in the past. 3% favor a show held in the Spring and 6% are non-committal.

On the matter of a separate commercial car manufacturers' association, 59% were in favor of forming a separate organization; 35% were in favor of strengthening the commercial car division of the N. A. A. M., and 6% were non-committal.

There were a number of concerns who believed that the N. A. A. M. should be the only organization, and that the N.

A. A. M. should control the shows, but they also believed that the commercial car show should be separated from the pleasure car show, and favored a fall date.

Those concerns which favor the holding of the two shows at the one time argue that the commercial cars reap some benefit by the advertising done for the pleasure car show, and also that many dealers who come from a distance to the shows would not make the journey twice for two separate shows, but when they come for the pleasure car show will stay over for a few days for the commercial car show.

It is for the manufacturers to decide whether these considerations have sufficient weight to induce them to consent to the continuance of the shows as they are at present arranged. It is only fair to state that most of the concerns, which want the shows held at the same time, as has been done, are those which make both pleasure and commercial vehicles, and therefore, no doubt they are influenced to a great extent by the fact that there is some saving in expense.

It is questionable whether the advertising which accrues to the commercial car show by being held in conjunction with the pleasure car show is an advantage. If the commercial car show were held separately the publicity which it would receive gratis in the news columns of the trade and daily press would not be divided in any way with the pleasure car interest, and as the commercial cars appeal to an entirely different class, it would seem that there would be considerable benefit in having the publicity apply to commercial cars only, so that it would appeal to the proper class of buyers.

We are unqualifiedly in favor of a Fall show. It will attract more attention both within and without trade circles. A great majority of the commercial car makers believe it to be the best season of the year to show their cars, and secure orders both from dealers and users. The N. A. A. M. should, for the best interest of this branch of the trade, arrange for a Fall commercial car show.

On the matter of a commercial car organization, it would be infinitely better to have one organization which would be practically a unit of the entire trade, than to have a divided trade. Therefore, as a number of the commercial car manufacturers are already members of the N. A. A. M., and feel that commercial car interests should be and would be properly taken care of by the commercial division in the N. A. A. M. it certainly seems to be best that all the truck makers join the N. A. A. M. and through their influence in the commercial car division of the Association, secure what they consider is right in the matter of shows and general trade regulations.

It would not be a good thing to have half of the members in a separate organization, and the other half in the N. A. A. M. This would lead to divided effort and contention, which would be anything but beneficial in the end. We therefore hope that the unallied manufacturers of commercial cars will at once take steps to become members of the National Association of Automobile Manufacturers' Commercial Car Division, and we also believe that it is a duty of the National Association of Automobile Manufacturers to arrange the date of the commercial car show in conformity with the wishes of the majority of the entire commercial car trade, rather than according to the wishes of a small number of manufacturers who produce both pleasure and commercial cars.

## TRUCK EFFICIENCY DEPENDENT UPON MINIMUM INOPERATIVE PERIODS



ONE company uses a truck and declares that it is absolutely no good, the cost is prohibitive and that they can do the work much better with horses. Another firm in the same line of business uses one truck, gradually increases the number of trucks in service and eventually discontinues the use of horses altogether.

The difference lies, aside from a careful selection of the type of machine and driver, almost entirely in the method of operating. By this we do not mean careful operation on the part of the driver, but refer to the planning of the delivery so that the best use is made of the truck, and its great advantages over horses brought into fullest play. To do this it is often necessary to reorganize the entire delivery system, and sometimes discharge the old superintendent. Head work is what is required to make the commercial car a success. The methods of loading must be such that the truck can be kept continually on the move during the eight hour day. In contrast to this, many trucks are held inactive hours at a time owing primarily to poor arrangements in connection with the handling of the goods to be delivered. Sometimes this is due to continuing the same system with the trucks that was satisfactory when horses were used. Loading platforms are often too small; elevator accommodations are insufficient to get the finished product to the car. With horses a rest of thirty minutes or three quarters of an hour was essential, and so the delay was thought nothing of. With trucks, however, this delay is not necessary and may mean the difference between satisfactory and efficient service and unsatisfactory service.

Ingenuity is often required on the part of the delivery head to arrange shoots, loading nests or platforms on rollers, proper approaches and ways of leaving the platforms, suitably arranged elevators and many other things which will make it possible to keep the trucks moving. They must be kept on the move if satisfactory service is to be had. The old delays incident to horse delivery should not be tolerated, and thus not only do the trucks make good, but the entire delivery system is accelerated. Primarily, the customer receives the benefit, but eventually the returns come back to the progressive truck user in the form of increased sales and larger profits.

In Europe some of the merchants have reduced the use of trucks to a science. The method of handling the goods, of loading and unloading, is a revelation to the average horse user. In some of the department stores of London the helper on the truck reports at the store half an hour before the driver, so that the entire load is already assorted and arranged on the shipping platform when the driver arrives. This gives the driver a short time in which to look over and oil each important part, and the truck is on its way in a very few minutes

after arriving at the store. In other instances two helpers are employed, so that while one is off on the first load, the second is preparing another load. When the truck returns there is no delay whatever. The first helper then stays behind to prepare the next load, etc. This method is particularly useful in short hauls, which is another field where the truck may have difficulty in competing with the horse. Loading nests and wagons can be loaded while the truck is delivering and the load then transferred, and all such devices greatly increase the truck's efficiency.

The time is here when in certain lines of trade trucks will have to be put in service in order to retain the business. So many trucks are now in use and the field of operations of those using them has so increased, that the store without motor delivery is gradually losing ground and will soon be a commercial failure. No customer will trade at a store which delivers goods at 10 or 11 o'clock at night during rush season when it is possible by trading at another store to receive these goods at 4 or 5 o'clock in the afternoon. Large industrial plants will deal where prompt delivery is assured.

## A PLEA FOR CLEANLINESS



IT is quite often observed that large companies using both commercial cars and horses, allow their trucks to become very dirty and ill-kept in appearance, while the wagons always look spic and span. Of course, there is good reason for one being dirtier than the other, but there is no good reason for allowing this dirt to remain on a machine. Trucks cover many more miles a day than horses and at a much greater speed, and naturally accumulate much more dirt and mud in a day, but there is no reason why they should not be washed every night in any well-kept garage.

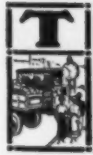
Another reason may perhaps be the lack of time, as many establishments do not feel that they can afford to delay the machine, even for a minute, by such useless operations as washing. But it seems reasonable to suppose that this could be done by a separate set of men at night, and thus not take the truck out of service.

This being the case, the only other reason that can be assumed for this lack of cleanliness is the cost. The horses are carefully groomed and cared for each night, and although the wagons are not washed each day, their slower speed and short distances traveled does not sufficiently dirty them to require it. If the same amount of attention and time were given to the washing and care of the ordinary truck each night that is required to care for the horses, there would be fewer commercial cars on the street, which in looks are a discredit to the owner.



**EVERYBODY'S DOIN' IT**

## Furniture Dealers and Storage Warehouses Quick to Appreciate Advantages of Trucks



HERE seems to be a marked difference in various lines of business in the rapidity with which motor delivery is being adopted. Naturally certain classes of business can use commercial cars to advantage with but very little change in existing methods. Notable among those who have readily taken up commercial car delivery methods are the furniture dealers.

### Advantages of Motor Trucks for Furniture Moving

The reason for the more rapid adoption of motor delivery by furniture movers is in part due to the large platforms which are available on commercial cars, and the enormous loads which can be carried just as far and fast as desired regardless of weather conditions. Furniture is almost always to be moved in a hurry; in case of families moving from one house to another it is always desirable to move all the goods in a single day. If the haul is a long one, this will require several wagons, where horses are used, and the furniture will arrive very late, giving little time for arrangement in the new quarters that evening. With motor delivery it is possible even to carry furniture 150 miles or more from one city to another with but one loading and one unloading and practically no breakage and with almost the same ease that household goods could be moved from one house to another in the same neighborhood.

Very large bodies, suitable for carrying bulky furniture, can be placed on a chassis and even when loaded to its great-

est extent, will be well below the capacity of the truck. Such a load would be impossible for horses if any hills or any distance had to be covered. Larger carrying capacity per vehicle cuts down the number of men required, which may not materially reduce the cost, as at least one of these men must be paid higher wages, but the efficiency of the entire system is increased and the work carried on with more intelligence.

The other day the writer came in contact with a crew of five men and an enormous Mack truck, operated in the service of the Milburn Storage Company, of Philadelphia. This truck, according to the crew, had not been in a garage long enough in two weeks to be washed. It is used for long distance hauling. When asked how they did the work before they had the truck the driver said, "We never had any of this kind of work before. Why the work this machine has done this week, it would take a month to do with horses. We often go to towns 50 and 60 miles from the city and have even been over to New York and back the same day, a total distance of nearly 240 miles." This is an extreme case, and both the truck and the men were evidently overworked. However, the truck did not show it if the men did. Occasionally such a series of rush orders which must be taken care of, can be with a truck, while with horses it would be impossible. The driver of this truck even stated that he had had so little sleep that he would almost go to sleep driving the truck. The rest of the crew snatched what sleep they could on the runs, using the quilts and padding as bedding. Another and even larger



Group of Trucks in Furniture Service

The use of trucks is not confined to large firms, but individual furniture and piano movers are now using machines. Long-distance hauling of household goods is rapidly taking the place of railroad short hauls





**Group of Electrics in Use by The Lincoln Safe Deposit Company**

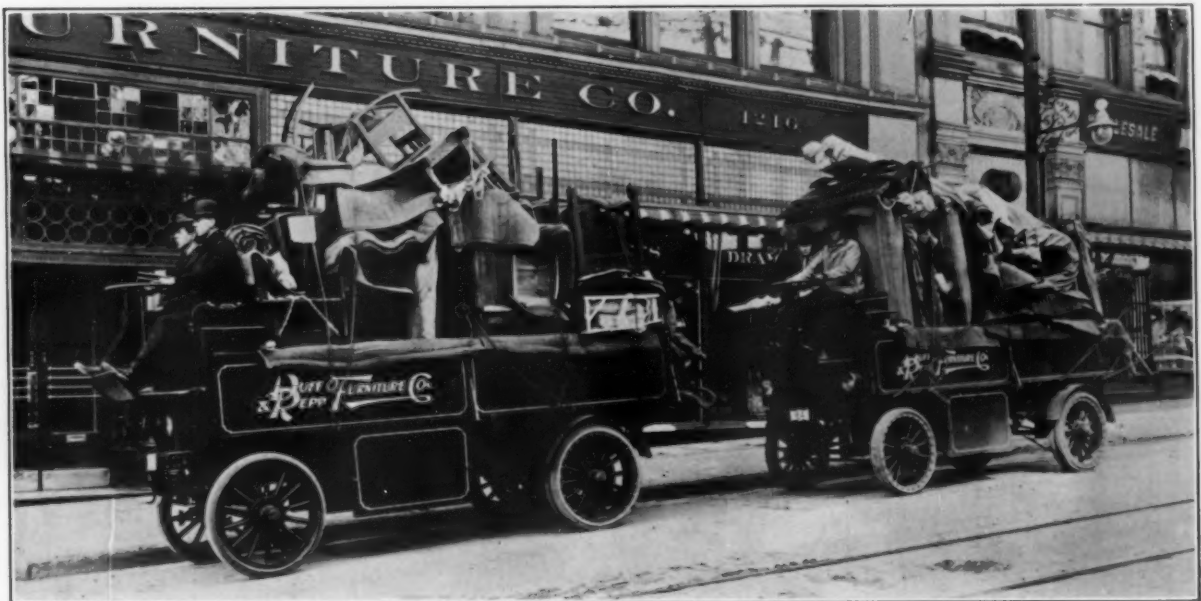
These vehicles are gradually displacing the horse, the Lincoln Company stating that in the near future they will have displaced all of their horses, even for short hauls

Mack truck is soon to be added to the equipment of this company, as the increase in this kind of hauling has been almost phenomenal.

Not only are large furniture companies making use of trucks, but individual drivers; in an accompanying picture is shown an Autocar delivery truck of Jas. Meharg, with which he moves furniture, pianos, etc. He says, "My truck takes the place of three horses and two wagons, the expense is less than the horses, the service is much better. We promise and make deliveries in one-half the time. If we can run a car three years with the same upkeep charges it will be a gain over the old system of about 25 per cent."

In Chicago, Alex. H. Revell Company, one of the largest furniture houses in the west, is a staunch advocate of motor delivery. In an accompanying photograph is shown a group of Kissel trucks being loaded in front of this store.

The Schwarz Storage Warehouse and Van Company, of New York, made the following statement: "We are using Packard three-ton motor vans for long distance moving of household goods to suburbs; previously when our vans went on these long distance jobs, four horses were required to draw them, and in most cases were compelled to stay over night, making an expense for putting the horses in livery and the men in a hotel. Now we can make any distance that the

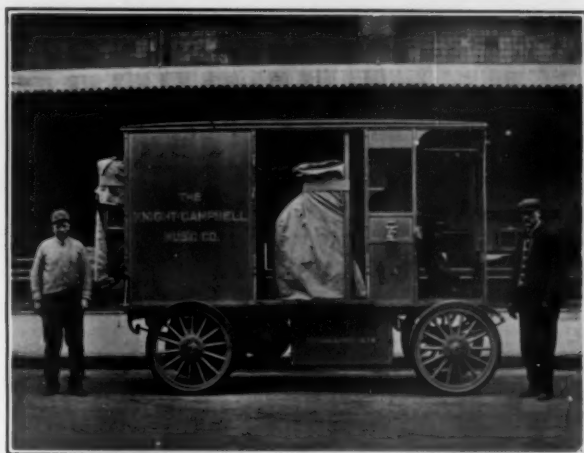


**Electric in Hilly Kansas City**

Two G. V. Trucks used by Duff & Repp Furniture Company, displacing eight horses economically

horse-drawn vans required 30 hours to do, in 10 hours, and would say that we have found motor vans great savers of time and expense, and also above all, save the double handling of large pieces of furniture, pianos, works of art, etc., which require great care and skillful packing. We are keeping our motor vans busy with out of town work, and can safely say that we are more than pleased."

S. Laskau, a piano hoister of New York, says: "I am glad to say that I have been a user of motor trucks for the past three years. On the 19th of May a year ago I purchased my three-ton White truck, and after putting it to a severe test, was satisfied that it was well suited for my service. The following is a report of what one of my three-ton trucks did



#### One-Ton Electric Moves Two Hundred Pianos in One Month

This small electric vehicle is in use by the Knight-Campbell Music Company, of Denver, Col., covering the entire district and making trips even up into the mountains.

during the period of five months, and I think that the record established was an extremely good one, particularly in view of the fact that it was used over all kinds of rough roads and in all sorts and conditions of weather."

#### Work of Three-Ton Truck Covering a Period of Five Months

Total mileage .....	6000 miles
Average length of haul .....	40 miles
Average speed .....	12 miles
Average number of hours operated per day .....	8 hours
Mileage per gallon of gasoline .....	9 miles
Mileage per gallon of oil .....	80 miles
Tire expense per mile .....	5 cents
Total expense for repairs .....	\$6.00

#### Electrics Also Used

Although most of the furniture moving is of the long haul variety where gasoline cars are employed, for city delivery electrics are used. In an accompanying photo is shown one of the electric 3000 lb. capacity trucks of Anderson Electric Car Company's manufacture, in use by the Pringle Furniture Company, Detroit. This truck has a carrying space 13 ft. long by 6 ft. wide, with 6 ft. of head room. It is equipped with standard tires and a 60 cell, type A-6, Edison battery.

#### Lincoln Safe Deposit Trucks

Electric vehicles are also used quite extensively by safety deposit companies. The Lincoln Safe Deposit Company, of New York City, uses in its service six G. V. electrics. Two of these are 2 tons capacity and 4 are special machines of 3

tons capacity each. Four of these machines are shown in the accompanying photograph. In the year 1909 the first machine was put in service; in 1910 three more trucks were purchased, the four vehicles displacing seven horses and four large vans which had previously been hired from a contractor, to whom they paid \$14 a day for the horses exclusive of harness, wagons and driver. This made an expenditure of \$84 a week for horses alone. Let us compare for a moment this expenditure with the cost of power to operate the four electric vehicles. No definite maintenance figures were given out, but they were reported as being exceptionally low. Basing the cost of power on a rate of 6 cents a K. W. hour, which is exceedingly liberal, the cost for four successive weeks was as follows:

#### Cost of power for four electric vehicles:

First week .....	\$14.75
Second week .....	15.06
Third week .....	15.54
Fourth week .....	14.50
Average .....	\$14.71

This makes an average for the four vehicles per week for power of \$14.71, as compared to \$84 a week for the horses. The large trucks average from 14 to 15 miles per day and the smaller ones 23 to 25 miles. When the much more efficient service that is being rendered by the trucks is taken into consideration, together with the reduced cost, it is no wonder that the company makes the statement that in no event would it ever return to horse and wagon equipment.

In the far South the Garrison Van and Storage Company, Dallas, Texas, has been operating a 3-ton Dayton truck since October, 1911, exclusively for furniture moving. Aside from a serious break in the motor on account of which the makers immediately replaced the engine free of charge, the machine has given perfect satisfaction. No detailed account of the working cost of the machine has been kept, but the users state, "we know for a fact, that we are operating the truck each month for less than it takes to operate a two-horse van. Of course that does not include depreciation, which is something we cannot figure, as it depends on the kind of care that it gets and a careful driver. We can hardly operate horse vans here in the summer time on account of the hot weather, but of course the heat will not stop the truck."

#### Electric Vehicles Used in Moving Pianos

In Denver, Colo., the Knight-Campbell Music Company are using a 2000 lb. G. V. electric, which was put into commission on November 1st, 1911. Up to February 29th this machine had already traveled 2,871 miles, delivering pianos on trips ranging from one-fourth of a mile to 35 miles. The longest trip is to Morrison in the edge of the mountains, 17½ miles from the city. This trip is made, including the time occupied in delivering the piano, in 3½ hours, and the car still had sufficient charge for short hauls in finishing up the day's business. With this truck they average about 200 pianos a month and report practically no expense for repairs.

#### Two Trucks Replace Eight Horses

In hilly Kansas City the Duff & Repp Furniture Company operate two 2-ton G. V. trucks which they say are giving splendid service. The first machine was purchased in June, 1909, and performed so well in their service that a second car was purchased in 1910. These two trucks have economically replaced 8 horses.

## FURNITURE CONCERN SAVES LOSS OF TIME BY USING LOADING NESTS

The People's Outfitting Company, which conducts stores in many of the middle western cities, uses at the Detroit branch a two cylinder, one and one-half ton Grabowsky car which has been in service for two years, and a three-ton vehicle of the same make of the new four cylinder type was installed in January.



Grabowsky Three-Ton Car Used by the People's Outfitting Company, of Detroit. Loading nests are used to eliminate waste of time in loading and unloading.

In connection with the larger car two loading nests are employed, that is one is packed at the warehouse, while the other is in the car, loaded. When the car is back at the base it is merely necessary to transfer the nests, which are taken from one floor to another on the elevator. The nests are on large castors or wheels, the center members being larger than those at the ends. It is stated that the device is a great time saver.



Rear View of the Three-Ton Grabowsky Car Used by the People's Outfitting Company, of Detroit. This car has been in service for ten years.

The head shipper states that the ratio of effectiveness as compared with horses is at least two to one. For example the cars, either of them can be run to Wyandotte and return for one trip and then to Grosse Point and return for another and make both trips in a working day, a distance of approximately 48 miles.

### Specify Motor Delivery

It is stated that the cars have developed trade and that many customers specify delivery by the trucks. This is doubtless explained that truck delivery to the more remote sections means direct delivery with no freight to pay or intermediate handlings to contend with.

The average run for either car is about 40 to 60 miles per day. The drivers of the cars are at present paid \$20 a week each.

The concern uses twelve horses and the cars are kept at the main warehouse.

## SATISFACTORY PERFORMANCE OF FIRST CAR LEADS TO PURCHASE OF SECOND ONE

So well satisfied was the Pringle Furniture Company, of Detroit, Mich., with the initial installation, a Detroit electric, that a second car of the same make and type has been purchased. Both vehicles, one of which is shown herewith, with a special furniture body, are used for delivery in Detroit and surrounding towns.



One of the Detroit Electrics Used by the Pringle Furniture Company, of Detroit. The firm has disposed of the horse equipment with the exception of one team, which is retained for possible emergencies. The two electrics by reason of greater speed are able to care for the work.

Current for the batteries, charging is done at the company's garage, costs \$25 per month, and all expenses are covered, it is said, by \$150 per month per car.

The driver is paid \$16.50 a week, his helper \$13.50 and this item, with consideration of other features of the expense, makes the daily cost a little more than \$5.

The Pringle service, in which it was shown that horse depreciation is 68 per cent., was fully described in the February issue of the COMMERCIAL CAR JOURNAL.



## TWO TRUCKS DISPLACE ONE SINGLE AND THREE DOUBLE TEAMS

Owen & Company, Detroit, Mich., are well pleased with the two one-ton Gramm cars now in service by means of which seven horses and four teams have been taken off the routes, that is three double teams and a single.

The present cost is for fuel only, as the cars have been in service only a short time, the first purchased last November, the second in March of this year.



### Loading and Unloading

One of the one-ton Gramm cars operated by Owen & Company, of Detroit. The drivers of the cars were formerly teamsters and received their training at the Gramm factory.

Both cars are used for all general work and make 40 to 60 miles a day and do the work very satisfactorily.

### Charged Off in Five Years

An official of the firm states that they have figured the cars will be charged off the books in five years, and have come to this conclusion after consideration of the methods and data of the truck makers.

Both drivers were formerly teamsters, and one of them spent some time at the Gramm factory, the second being for a helper until the recent installation.

## ONE INSTANCE WHERE THE TRUCK WAS TOO LARGE

A feature of commercial car furniture service is that some of the vehicles are larger than need be. A case in point. A short while ago the representative of the COMMERCIAL CAR JOURNAL was informed by the delivery manager of a furniture house that one of the cars was too large for the service and for this reason: Most of the furniture handled was comparatively light and did not run to heavy weight, so that a full load would be far short of three tons, the rated capacity of the car. "Why, when the car is fully loaded," said the delivery manager, "the springs are not bowed the slightest. A lighter car would do the work just as well, and from my

experience I think that it would be the best in the long run. The one and one-half ton car is more nearly loaded to capacity. My argument is simply this, there is no use in having a three ton car for a one ton load."



### Truck Widens Scope of Business and Decreases Cost of Delivery

Service is satisfactory in the opinion of the Sumner Company, Detroit, furniture dealers, who are using a double friction driven Seitz commercial car. No exact record has been kept of the cost, and repairs have been slight. It is estimated that the vehicle is operated for about \$3.00 a day. Previously to purchasing the car, the firm paid \$3.00 a day for a horse and driver and furnished their own wagon and harness. It is stated by a member of the firm that a horse outfit could not do the work now being done by the car, since it covers the whole city and adjacent towns. The car was acquired last summer and though the winter season was severe and the driver a comparatively green man no trouble of any extent was experienced. All freight is hauled with the car. Tires show little wear at present. A day's work averages forty miles.



### One Truck Saves Two Pairs of Horses Per Year

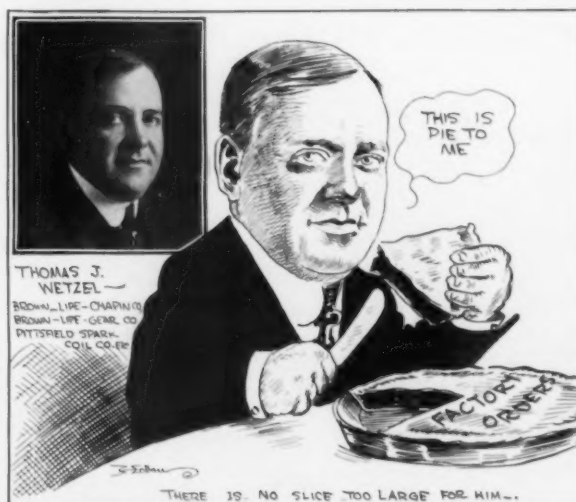
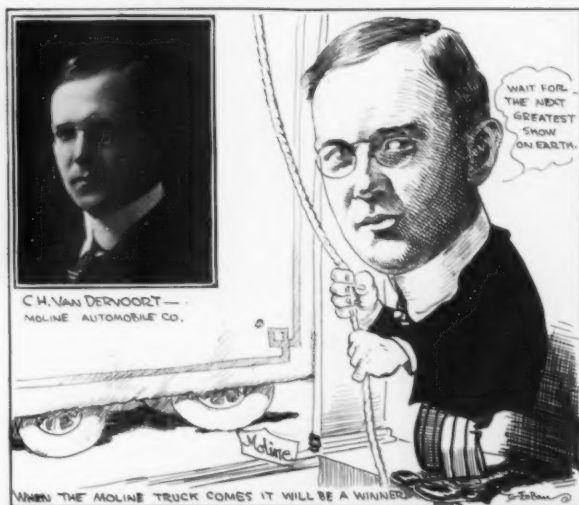
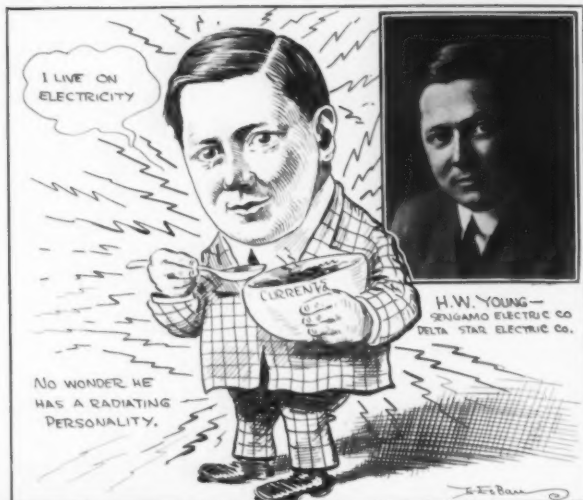
G. M. C. two and a half ton commercial car used by the A. A. Gray Company, of Detroit. It has been in service for two years and is now on its second set of tires. Before the purchase of the car, the firm had to buy two pairs of horses a year.



**If you want to beat the horse use Commercial Cars**



# OUR GALLERY OF SALES MANAGERS.



## Advantages of Steel Wheels for Heavy Commercial Cars

BY A. W. ROBINSON



ONE of the principal problems on which the manufacturers do not seem to have come to an agreement, as yet, is wheel construction. The wheels on the large capacity motor trucks of today are called upon to carry a heavier burden, at a greater rate of speed, than ever before in the history of hauling, and in addition, these wheels are called upon to stand the severe stresses due to the transmission of power, which affect the wheel in a direction and in a way, for which there was, up to the introduction of the motor truck, no precedent.

In order to meet these new conditions the wheel makers have increased the dimensions of the sections of their spokes and felloes, and following the precedent of Europe cast steel wheels are also being made.

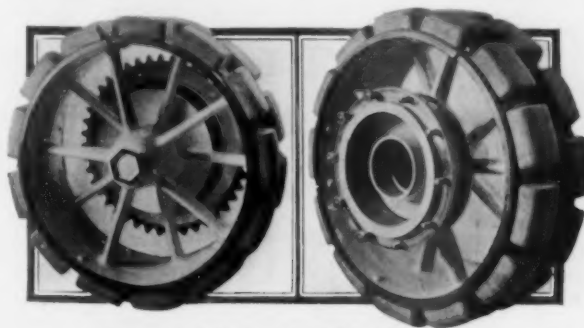
The metal in these wheels has a tensile strength of between 75,000 and 85,000 lbs. and an elastic limit of between 38,000 and 45,000 lbs.

Before entering a comprehensive discussion of the merits of the steel wheel, it might be interesting to discuss for a moment an objection which the opponents of the steel wheel advance.

The argument against the steel wheel is that under service it crystallizes, but this is a misapplication of terms. Crystallization in steel can only take place under the action of heat, and when once the steel has formed into its ultimate shape the molecules of the steel have all arranged themselves and

to suppose in face of the facts as they stand, that a cast steel wheel will last as long as the truck itself, if not indefinitely. Experience thus far leads us to believe that cast steel wheels will be one of the things around which a new truck will be formed as replacements are gradually made.

The steel wheel is naturally attractive on account of its long life, but it has certain intrinsic qualities which make it appeal to the truck owner, the manufacturer and the tire man. The truck owner, it is claimed, finds that the steel wheel cuts down his tire cost and eliminates wheel maintenance charges. They are lighter, free from trouble and are always absolutely



**Johnson Steel Wheels**

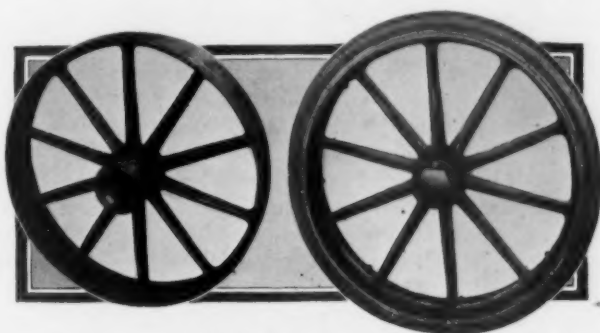
Capacity five to ten tons, made of crucible Titanium steel cast with hollow tubular spokes and integral drums and sprocket seat

round, reducing the jolts and jars, which in the end will have an effect upon the units of the truck. The tire manufacturer claims they give a firm solid foundation for his tires which will insure that they will be always absolutely round, preventing flat spots which have a destructive action on them, and because the steel wheel radiates and dissipates the heat generated by the friction between the tires and the road surface, so that it cannot have any injurious effect on the tire itself.

### Less Machine Work

As the casting reaches the manufacturer in one piece the machine work, the great item of expense in the construction of any mechanism, is reduced to the minimum. Instead of having to carefully shape the spokes before assembling them in the hubs and felloes, which each in turn have been carefully constructed, with a cast steel wheel, the manufacturer can complete, all machine work on the boring mill in one process, except drilling the holes necessary to secure the tires. The flange can be turned down to size and faced on one side and the hub can be faced and prepared to receive the bearing at one set up. Absolute roundness and true concentricity, the most valuable attributes of a wheel, are thus guaranteed, and the ability to perform all of these operations at one setting, with the consequent elimination of handling, results in an exceedingly low labor cost.

This unit construction, if desired, can be carried even further than it is to-day, it being perfectly possible to cast the brake and the sprocket drum integral with the wheel itself, although, of course, as the sprocket teeth are apt to wear, provision of some sort must exist for their replacement. Being cast solid in one integral piece there is no opportunity for any



**Light Weight Steel Wheel**

The metal of the spokes of cast-steel wheels can, by enormous pressure, under tests, be bent and straightened without showing fracture. Such wheels are made, weighing less than wood wheels for the same service.

crystallization is an impossibility. It is probable that the property which the critics have in mind, when they speak of crystallization, is the "fatigue of metal," and this is a condition which might obtain in case a steel wheel is not properly designed. However, with a proper design, avoiding any sharp angles or corners, merging the sections gradually and easily in long sweeping curves and arranging the masses of metals in proper relation to the other thinner portions of the casting, no difficulty will be experienced.

Although to-day no cast steel truck wheels have been in service a sufficiently long time to determine their life or even to make an approximation of their life, although they have been used for several years in Europe. It is not unreasonable



working of the various joints or connections. There is no shrinkage or expansion due to wetness or dryness of the atmosphere.

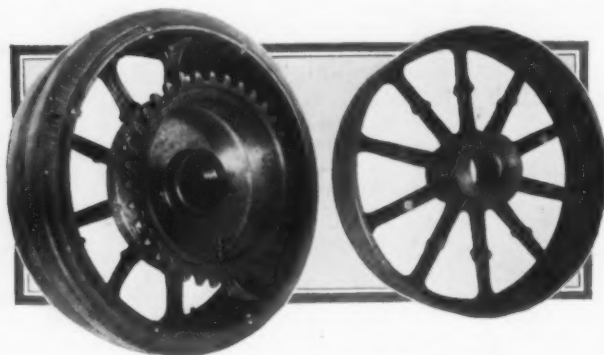
One very important attribute of the steel wheel is its ability to withstand, without injury, side thrusts of great intensity. Tests made by William Carlisle Johnson, of the Johnson Steel Wheel Corporation, showed that a hollow spoke cast steel wheel would withstand side thrusts equivalent to 270,000 lbs. per sq. in. of the area of the spokes in a 10-spoke wheel. A certain wheel which he tested by actual drop test, the most brutal and trying of all the tests, showed that after subjecting the wheel to a drop where the energy developed, approximated 5,000,000 ft. lbs. The wheel, while being distorted, showed no fractures, and could have been straightened and used. Naturally, no commercial vehicle wheel will be subjected to a side thrust of this intensity.

The very nature of the steel wheel adopts it wonderfully for the transmission of power, for the disc radiating from the hub and forming the base and backing of the spokes and the strengthening on either side of the uniform section spokes, strengthens these members at the very points where the stresses due to the driving strains are centered.

The absolute concentricity of the hub, the sprocket and the flange assist greatly in the economical and efficient trans-



Steel Wheel Fitted With Demountable Rims



Cast-Steel Wheel, Applied Drum

Note the webbed flanges at the hub and rim ends of the spokes

mission of power, for there being no high and low spots, there is no alternate tightening and loosening of the chain. In the case of a gear driven truck this condition is even more important.

### Dissipation of Heat

The saving on tires of a steel wheel, due to the radiation of the heat, although a mooted point, seems to be pretty well sustained. The heat in the tire passes to the flange which has a broad surface exposed constantly to the action of the air and to the spokes upon which fresh air is constantly blowing, thus enabling the tire to diffuse its heat before there is any chance for injury to take place. As yet no exact tests have

been run, but the fact remains and seems to be pretty well proven by practice.

Most of us have observed tires on heavy trucks in which wear disclosed cores which were soft and spongy, absolutely lacking in resiliency and having no lasting powers. This devulcanization, if it can be called that, is hard to account for, but as the phenomena does not seem to be observable, on trucks with cast steel wheels, it would seem logical that the devulcanization was due to the heat retained in the tire.

One point which has not been discussed very completely in regard to steel wheels, although it is a very important one, is their advantage in carrying dual tires. In instances of wheels offset, the outside tire is entirely unsupported by the spokes, which enter the felloes underneath the inside tire. In this case the steel wheel is particularly valuable for by means of strong amply filleted lugs, the strain on the outside part of the flange can be successfully transmitted to the spokes without any danger to the wheel flange itself.

Through searching scientific experiments and researches and from hard, severe road tests in the hands of the manufacturers, who wanted, if possible, to break the steel wheels and from hard usage in the hands of the user, their worth has been proven.

Time alone can tell the extent to which the development of the steel wheel will be carried and time alone can tell the average life of the steel wheel, but its use thus far has proven its worth.



DIRECTOR PORTER, of the Public Safety Department of Philadelphia, praised the efficiency of the Newark fire system and electric patrol wagons. Steps are being taken to add five new electric patrol wagons of one-ton each to the Philadelphia service. These machines must be capable of making 100 miles per charge at a speed of 25 miles per hour. Each machine will be able to care for three districts.

THE AUTOCAR COMPANY, of Ardmore, Pa., has recently issued "Parts and Price List Catalogue," which has been compiled with a view towards simplicity and to this point every part of the car is illustrated and accompanied with descriptive matter showing how to remove and assemble various parts. The book is bound in loose leaf style so that additions can be made from time to time.

# Leading Lights of the Industry

## HENRY FORD

Probably no man connected with automobile history is better known than Henry Ford, President of the Ford Motor Company, Detroit. Away back in 1891, when he was an employee of the machine shop of the Edison Electric Company, he built an automobile which was driven around the streets of Detroit. On June 16, 1903, the Ford Company was organized with Henry Ford as President, General Superintendent and Designer, while James Couzens assumed the duties of Secretary, Treasurer, Cashier, Office and Sales Manager. The office force consisted of one one-armed stenographer. The factory was a one-story frame building. From this small beginning Henry Ford and his co-worker and associate, Mr. Couzens, have built the largest automobile factory in the world, with a production per year equal to that of the combined factories of some of the foreign nations and equal approximately to one-third of all the cars produced in America.

Henry Ford was confident that the motor car would become in time, one of the world's greatest utilities and an indispensable factor in the lives of the people, and that a fortune awaited the manufacturer who could produce a high-grade, thoroughly efficient car at a price which would bring it into the class of the home horse and buggy. With this idea in view he worked persistently toward quantity production and a car of merit at a reasonable figure.

Within a year an addition to the small wood factory became necessary; at the end of a year and a half the Ford Motor Company moved into a new plant on Piquette Avenue, one of the finest of its kind at that time. Here was produced the first low-priced runabout and touring car of the Ford Company. Soon realizing that even this plant was inadequate, Ford, with characteristic promptness, purchased a sixty-acre tract on North Woodward Avenue, and the erection of the present enormous and magnificent Ford plant was begun.

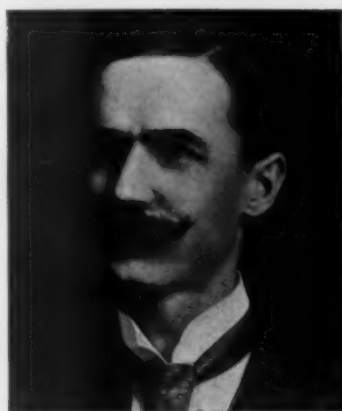
At the present time this enormous plant is producing a complete car ready for shipment every minute and 30 seconds—a manufacturing feat unique in the history of automobile manufacture and one not likely to be duplicated by any other maker in the near future.



HENRY FORD



J. R. CLARKE



B. A. GRAMM

## J. R. CLARKE

J. R. Clarke, President and General Manager of the American-La France Fire Engine Company, has for many years been at the head of the largest company in the world specializing in the field of heavy duty fire apparatus, its steam fire engines, hook-and-ladder trucks, water towers and chemical apparatus being in use in nearly every fire department in the United States.

The American-La France Company is also one of the largest producers of motor fire apparatus in the country. In the production of this apparatus great skill and a

thorough knowledge of automobile practice has been required, on account of the unusually severe service demands of fire duty. An ordinary motor fire car must carry a load of from 7,500 to 10,000 lbs., and attain vehicle speeds of from 25 to 55 miles per hour. Furthermore, it must be ready to respond instantly to the "call" and withstand being driven over all conditions of streets. It must be sturdy enough to stand up under all

weather conditions, often being coated with ice, and in the case of a motor fire pumping engine, may be expected to run its motor and pump continuously for possibly ten or twelve hours or more. These are only a few of the conditions to be considered in designing and building motor fire apparatus, which the American-La France Fire Engine Company, under Mr. Clarke's able leadership, has successfully met.

## B. A. GRAMM

It has been said that all beginnings are small, and this applies as well to the largest of modern industries as to the smallest; although occasionally the development of a particular line is so rapid that this fact is lost sight of. This is

more or less true of the motor truck industry and few realize the years of hard and experimental work which the pioneers in this industry had to undergo before the truck attained its present perfection. Years and years were spent in testing, studying, changing, and these years of hard work have borne fruit and have brought fame to the many prominent figures now connected with this industry.

Prominent among these men is B. A. Gramm. This name recalls a man who was one of the first to see and realize the

future importance of motor trucks. Long before the public at large had even dreamt of the possibility of the truck, B. A. Gramm was devoting all of his time to the perfecting of a satisfactory machine.

In 1900 he occupied a small shop, 25 x 30 ft., which was equipped with a small amount of machinery, and from this the first Gramm trucks were produced. In 1902 a one-ton electric truck was built, but it was soon decided to use the gasoline motor for propulsion. By 1903 a stock company was organized and manufacturing was commenced.

From this time on Gramm's exclusive time was given over to this proposition and the business was placed upon a self-supporting basis. In 1907 the first three-ton truck was built and quite a number placed upon the market. Their success was instantaneous and prospects for future business were very bright. About this time however, the panic of 1907 frightened some of the backers of the company, and in spite of all protests a receiver was appointed. This ended the development of the truck in Chillicothe.

Nothing daunted and with plenty of confidence in his product and the demand for the same, Gramm removed to Bowling Green, O., where prospects were bright. Capital was immediately raised and the plant opened. Success came from the first, although it required hard work and lots of it. From this time on, the growth of the Gramm Company and the increase of prominence of B. A. Gramm as the leading spirit of this company has been marked. About a year ago the new plant at Lima, O. was occupied. It is probably the largest exclusive motor truck factory in the country, and its erection can be traced almost entirely to the unfailing energy and faith of the builder of the truck, B. A. Gramm. The factory covers more than 145,000 square feet of floor space and has an annual capacity of over a thousand trucks which are shipped to all parts of the world. Recently a controlling interest in the Gramm factory was purchased by John N. Willys, of the Willys-Overland Company, Toledo, O., and hereafter these two organizations will to a certain extent be allied.

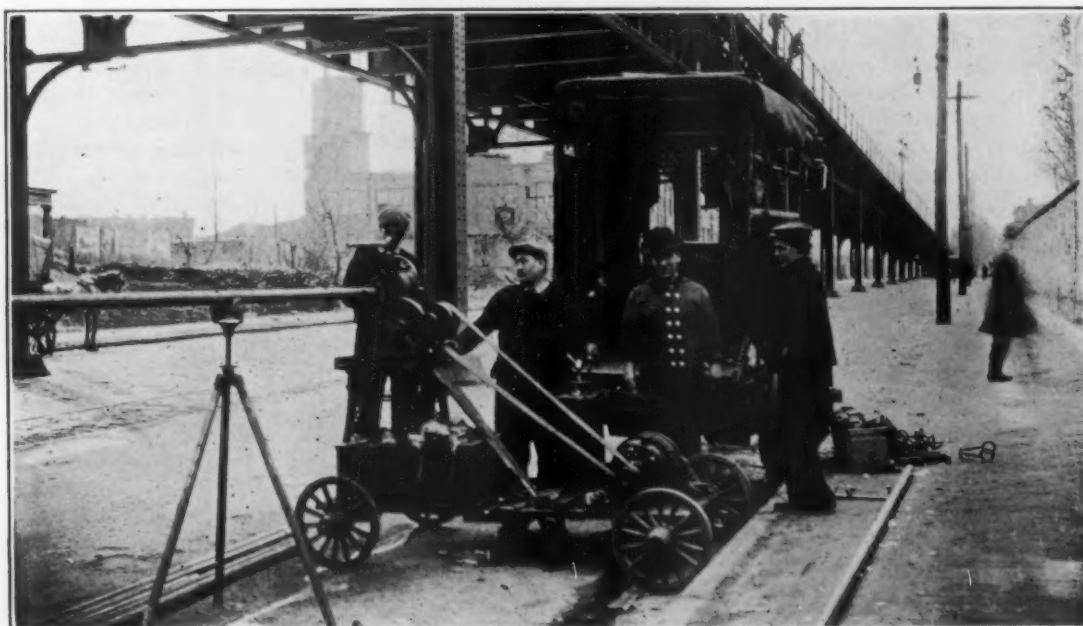
### ELECTRIC VEHICLE USED AS POWER PLANT FOR MOVABLE MACHINE SHOP

The Philadelphia Electric Company is making a novel use of an electric vehicle. As shown in the accompanying illustration the truck is used in connection with a sort of movable machine shop, power being supplied for operating the machines direct from the storage battery of the truck.

The present work consists of cutting and threading 2½ in. pipe, which is being placed on the elevated structure as a conduit for electric cables which will supply current for street lights, which are to be placed on the elevated structure. These lights were formerly on poles but are to be placed on brackets

on the elevated. The problem was at once presented of measuring, cutting, fitting and threading the conduit pipes and placing them in position from 30th Street to 63rd Street. To measure and fit and then prepare the work at some other point would be very expensive, necessitating hauling back and forth, returning with misfits, etc. The scheme herewith illustrated was devised and by means of a suitable threading machine operated by belt from an old electric motor taken from a truck, the job is being rapidly and inexpensively completed.

The threading and cutting machines are mounted on a small four-wheel trailer which can readily be hitched to the back of the truck, or backed against the curb and blocked, forming a rigid base for the mechanism.



**Doing the Work on the Spot**  
Pipe-threading and cutting machine moved from place to place and operated by an electric truck





## The Hydraulic Five-Ton Commercial Car With Manly Hydraulic Transmission

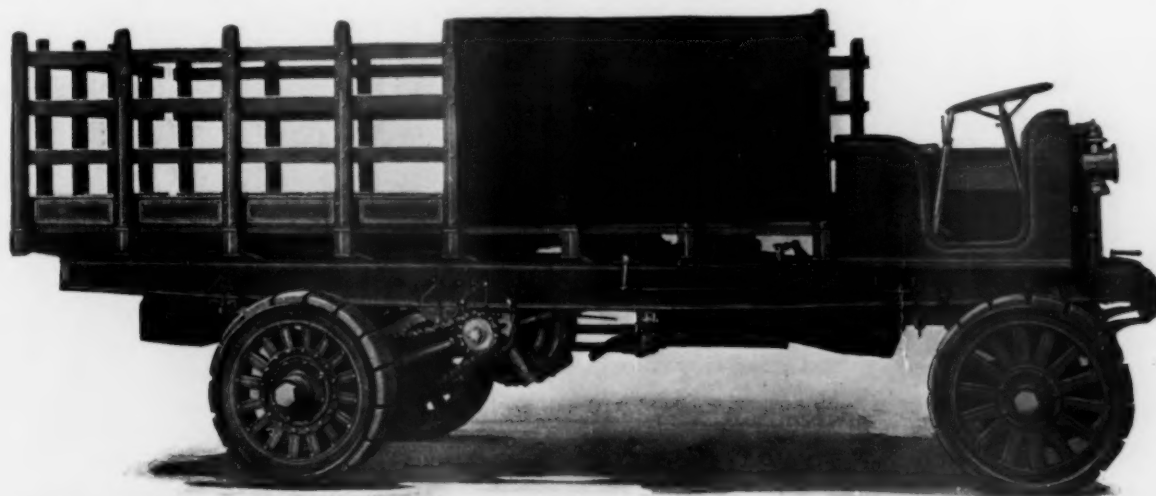


THE Hydraulic Truck Sales Company, of New York City, has obtained from the Manly Drive Company a license to build trucks using the Manly drive hydraulic transmission and are building "La France" 5-ton hydraulically driven trucks.

The Hydraulic trucks are equipped with a gasoline engine, which is not radically different from other engines in other trucks. It is a four-cylinder, four-cycle, T head, cylinders cast in pairs, bore  $5\frac{1}{2}$  in., stroke 6 in., with very large valves, crankshaft and bearings. It has a water cooled pump circulation, and the magneto and carburetor are of accepted standard makes.

While the Hydraulic truck has abundant engine power, being rated at 48 h. p. by the S. A. E. standard, it may not be necessary to utilize but a part of this and there is a reserve that may be applied when desired. The maximum speed is fixed at 1200 r. p. m.

The engine is carried under a hood between the seats for the driver and the helper, and it is cooled by a radiator at the front of the chassis, the water being circulated by a gear driven pump, and drafts from the fan mounted on the forward cylinder and driven by a belt from the camshaft extension, and from the fan-bladed spokes of the fly wheel.



Side View of Hydraulic Commercial Car Fitted With Platform Stake Body. This car uses the Manly Hydraulic Transmission and Clutch. By its use the ordinary clutch, gears, jack shaft and differential are eliminated. This truck has a gasoline engine which is not radically different from other gasoline engines in other trucks, being of four-cylinder, four-cycle, T-head type; cylinders cast in pairs; bore  $5\frac{1}{2}$  in., stroke 6 in.; with very large valves, crank shaft and bearings. It has water-cooled pump circulation, and the magneto and carburetor are of accepted standard makes.

The Manly hydraulic transmission and clutch used on these trucks, is used under a license for the patents granted to Chas. M. Manly. By the use of the Manly hydraulic transmission the ordinary clutch, gears, jackshaft and differential are eliminated.

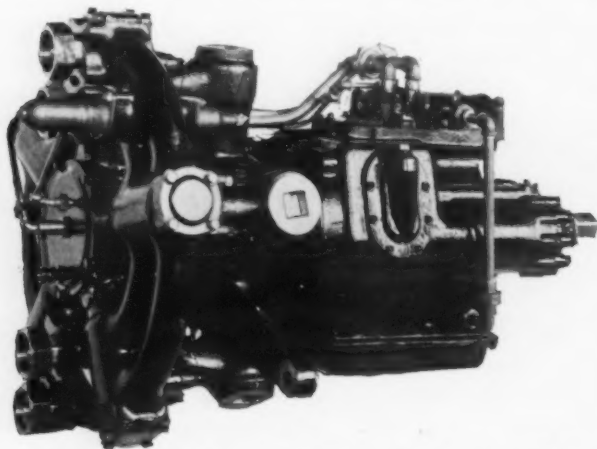
The feature of this transmission is the hydraulic system of power. This consists of a hydraulic pump connected directly to the gasoline engine, and two hydraulic motors, one forward of each rear wheel. The hydraulic pump drives oil through the hydraulic motors, thus forcing them to turn; these motors being connected by chains and sprockets to wheels revolving on a dead axle.

Lubrication is by means of a force feed to the bearings and splash for the engine interior.

The ignition of the Hydraulic truck is by a dual Bosch magneto, with fixed spark. The radiator is of the cellular type. The gas is controlled by a foot accelerator in the usual manner.

The control and changing of speed is accomplished by changing the stroke of the pump. This stroke can be adjusted to anything from the thinness of a hair up to the maximum. There are no "high," "second," "third," or "reverse" gears, by which the speed of the truck is limited, but any number of gradations of speeds may be had from the smallest to the

greatest. The greater the stroke of the pump, the greater the quantity of oil that is forced to the motors, and the faster the motors run, the power of the engine being constant, decreasing the stroke, decreases the speed of the hydraulic motors, which in turn increases the turning or twisting force that these motors produce; that is, the smaller the stroke of the



A Side View of the Pump: showing its five cylinders located around the central crank chamber. The whole unit suggests great strength to take up any sudden pressure of liquid.

pump, the greater the tractive effort of the truck. So fine a stroke may be obtained as to produce almost limitless tractive effort; at least limited only to the pressure of the oil allowed by the safety valve, which is all that should ever be required in practical operation.

There are five cylinders in the pump and the same number in each motor. The cylinders are arranged radially around the crank shaft.

The hydraulic motors are the same as the pump in every way except that their stroke is fixed and constant and equal to twice the maximum stroke of the pump. The oil used is ordinary machine oil, and is used over and over again. This oil is admirably adapted to the work, because of its lubricating qualities and its freedom from any danger of freezing.

By simply moving the central lever between one end of its throw and the central position, the speed of the motor shaft is varied from its maximum speed to a condition of absolute rest. By moving the levers between central and the other end of its throw, the motion is reversed and any speed is secured ranging from zero to a maximum speed in the reverse direction. Meanwhile the driving shaft continues to run at constant speed, whatever the speed or direction of motion of the driven shaft, the change being in the stroke of the pistons of the pump. In this truck the maximum reverse speed is limited to one-quarter of the maximum ahead speed.

In case of some emergency where only a very quick stop can prevent an accident, the driver has a small lever right on the steering column under his hand, which he pulls back toward himself and when the lever reaches the control position the pump is centered—the pistons have no reciprocating motion—that is, the pump has no stroke and therefore no oil can pass through, and there is a perfect brake.

The first Manly Drive hydraulic transmission installed on a truck was on a two-ton automobile truck that was put into service in January, 1907. This truck is still operating around the streets of New York City. No changes or repairs of any kind have been made to the transmission during the time the

truck has been in service, though it has been used as a demonstrating truck. It has covered 8000 miles and has never had a net load of less than two tons, represented in bags of sand and stone. The drive seems to be in as good condition now as when it was first installed, and when taken apart about a year ago, showed no evidence whatever of wear or deterioration.

This system of power transmission is covered by eight patents which have been issued, and over twenty others which are pending, all of which patents are owned and controlled by the Manly Drive Company, of New York.

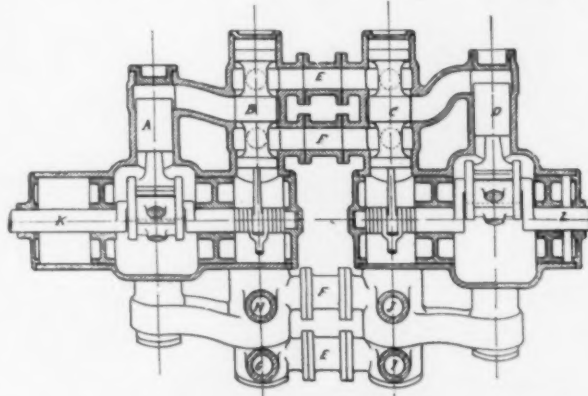
The other details of this truck are interesting because the construction is designed for especially heavy work. While normally rated at five tons, it is held that it will safely stand an overload of another ton.

The deck of the truck is 14 ft. by 6 ft., giving 84 sq. ft. of loading space. The platform is 4 ft. above the ground when unloaded. The overall length of the truck is 18 ft. 11 in., and the width 7 ft. 2½ in., with wheel base of 143 in. and clearance of 12 in. The overhang of the body is 5 ft. 3 in. The tread is 66 in. forward and 68 in. at the rear. The turning is 45 ft. Weight of chassis is four tons. The maximum speed forward is 12 miles per hour, and the maximum reverse speed is 3 miles.

Chassis frame is made of pressed alloy steel channel section 9½ by 3 in. by 18¾ in. not trussed, but it is built with numerous cross members and heavy gusset plates.

The springs are semi-elliptic, 42 x 3½ in. forward and 48 x 3½ in. rear.

Rear axle is dead, 3 in. square section; the front axle is 4 x 2½ in. alloy steel I section. The wheels are of wood, artillery type, and the tires are Kelly-Springfield sectional 36 x 5 in. forward and 38 x 9 in. rear. The wheel bearings are



Sectional View of Pump and One Motor Connected by Piping. The Motor is on the right and pump on left. They are practically duplicates and flow of oil is controlled by valves B and C.

Timken roller. The radius rods are 2½ in. in diameter alloy steel. The emergency brake is expanding on the rear wheel drums, and is operated by a lever at the right side of the driver. The gasoline supply tank capacity is 22 gal. and the oil capacity a quart.

### CORRECTION

In our 1912 Table of Specifications of Gasoline Commercial Cars, we gave the chassis price of the Mais 1½-ton truck as \$3,750. This was a typographical error, the correct price being \$2,750.

## Wichita Falls Commercial Cars for 1912



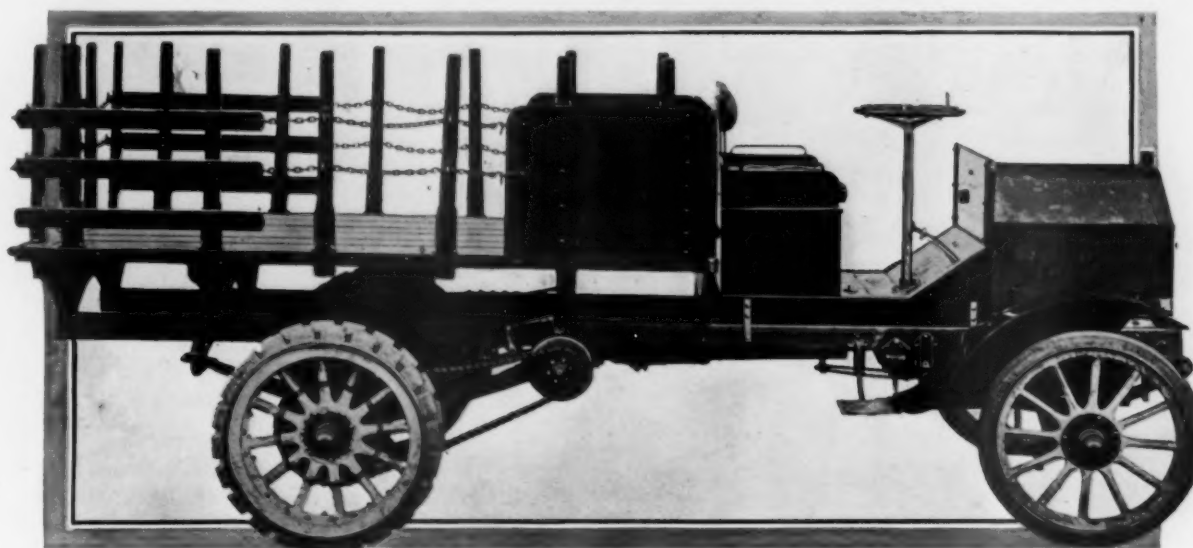
THE prime feature of the Wichita Falls commercial cars for 1912, manufactured by the Wichita Falls Motor Company, of Wichita Falls, Texas, is the single lever control, which is claimed to be superior and quicker than ordinary systems. The Wichita Falls Motor Company is capitalized at \$160,000, all of which is paid in. This concern is a newcomer and is said to be the first in the Lone Star State.

The first models were made in Detroit, Mich., under the direction of C. A. McKiernan and R. J. Schefferly, the

### En Bloc Motor

Designer Schefferly makes use of the en bloc motor with integral water jackets. The stroke is 5 in. and bore  $3\frac{1}{4}$  in. and the company rating for the unit is 23 h. p. The engine is of the L type and is bolted to two cast steel cross arms through  $\frac{5}{8}$  in. steel bolts, these arms in turn secured in brackets on the frame sides. The cylinders, which are formed with a broad flange, are anchored to the cast iron crank case through 9-16 in. steel studs.

The pistons are  $4\frac{1}{2}$  in. long, fitted with four diagonal



Side View of Wichita Falls Car Fitted With Platform Stake Body; showing dash with switch, steering column and pedals.  
The front tires are single solid, those in the rear being dual solid

chief engineer, who is the designer of the car itself. In laying down the two models Engineer Schefferly adheres to those things regarded as standard.

A new factory has been built of brick, concrete and steel, fire proof throughout. The main building is 100 x 200 ft., roof saw tooth construction with sky lights 80 x 100 ft., at intervals of every 100 ft. The two-story office building is 24 x 100 ft.

In the building of Wichita Falls cars, everything is done in accordance with standard practice and in the control only is there any notable departure from the general accepted methods of today. This single lever control is a patented feature, the work of C. A. McKiernan, who has tested the device in various types of pleasure cars before adapting it to commercial use.

Two models will be built for 1912, of 1200 and 2000 lbs. load capacity. Each, according to the makers, is good for an overload of 50 per cent.

Wheel base of the 1200 lb. car is 104 in., large car 112 in. Both have the same system of control, a four cylinder en bloc motor, three speed transmission, double side chain drive and magneto ignition.

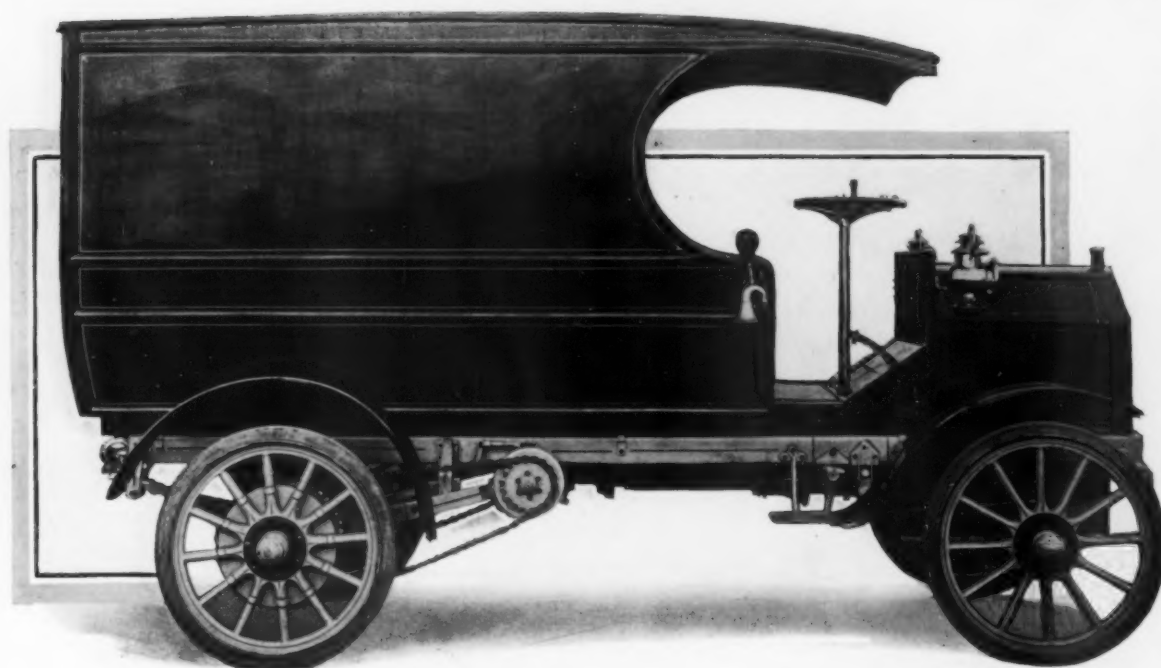
lapped compression rings, ground on two sides, turned on the other, there being three of these rings above the piston pins, one below rings, all being 3-16 in. in size. To guard against excess oiling, the pistons are drilled with small holes below the wrist pins.

Pistons pins are  $1\frac{3}{8} \times 1\frac{1}{8}$  in. hollow, hardened and ground and retained in the piston bosses through steel set screws and cotter pins. The drop forged I-section connecting rods are bronze bushed at the upper ends, split square at the bottom, the two sections held together with two 9-16 in. steel bolts, the heads of which are milled off on one side as a locking device. The shanks of the bolts are 9-16 in. diameter, and up to  $\frac{1}{8}$  of an inch with the lower half of the bearings, they are of the same diameter, but after that they are turned down to  $\frac{1}{2}$  in. so that the larger portion forms a dowel.

### Cooling

Thermo syphon system of cooling is employed, the fly wheel and clutch both being fan spoked. In addition there is mounted back of the radiator a two bladed solid aluminum fan, spring belt driven from an idler, the fan being supported on an extension of the aluminum water dome plate, hub bronzed bushed. Thus there are three fans to draw cooling





Side View of Wichita Falls Car, Fitted With Delivery Wagon Body. Solid steel frame; 34 in. wooden wheels with 3 in. solid rubber tires; chain drive to the rear wheels; three-speed selective sliding transmission; vertical steering column  $1\frac{1}{2}$  in. in diameter, fitted with an aluminum-spoked spider and mahogany rim; cone clutch.

air through the tubular radiator, which is mounted on rubber bumpers. These absorb practically all the shock imposed at this point. The water inlet from the cooler to the engine permits passage of the water to the base of the cylinder jackets where, after circulation, it passes outboard through the dome head plate, this having two leads connected with 2 in. rubber hose. There are two tanks in the cooler.

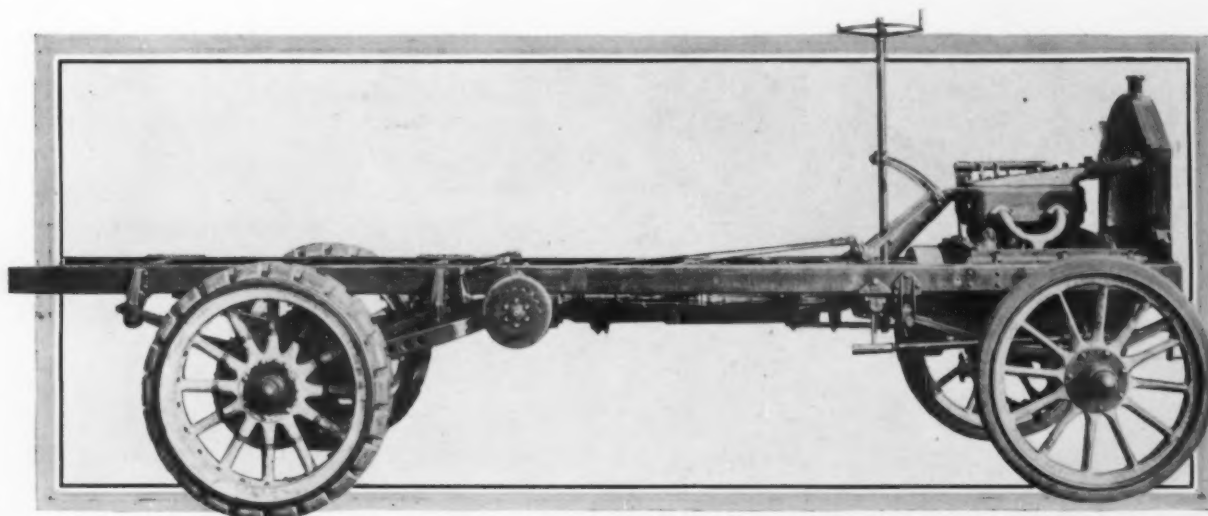
### Ignition

A Bosch magneto system of ignition is used, the spark plugs being located in the port plates and placed over the inlet valves, the relief cocks being over the exhaust. The

magneto is carried on the left side of the engine forward, driven from the motor gears through a coupling, a strap retained to a base on the crank case. The cables are led through an insulated tube.

### Transmission

A three speed and one reverse selective sliding gear is used, this worked from the bronze control hand wheel mounted above the steering wheel. All gears and shafts are of alloy steel, specially treated. Gears are 1 in. face, counter shaft 1 25-64 in., main shaft 1 15-32 in., bearings Hyatt roller, ball thrust used wherever necessary. Jack shaft is  $1\frac{3}{8}$  in diameter.



Side View of the Wichita Falls One-Ton Chassis; showing en bloc motor, with integral water jackets and intake manifold to cylinders. Cooling is by thermo-siphon system, the flywheel and clutch being fan-spoked. A two-bladed solid aluminum fan is also mounted back of the radiator

### Lubrication

A circulating pump system of oiling is used, the oil being lifted by a plunger pump driven from an eccentric on the cam shaft. The oil is led to the dash sight feed, then is delivered from there to the main bearings.

### Crank Case

The crank case is made of cast iron and is of barrel type, the end plates forming the bearing blocks. There are three integral dams which regulate the oil level, excess draining back to the bottom of the case, or to the sub-base, which is formed separately. The oil is lifted from the sub-base by a plunger pump driven from an eccentric from the cam shaft. The connecting rods being fitted with scoops, lift the oil and set up a spray necessary to lubricate the various elements.

### Two-Bearing Crankshaft

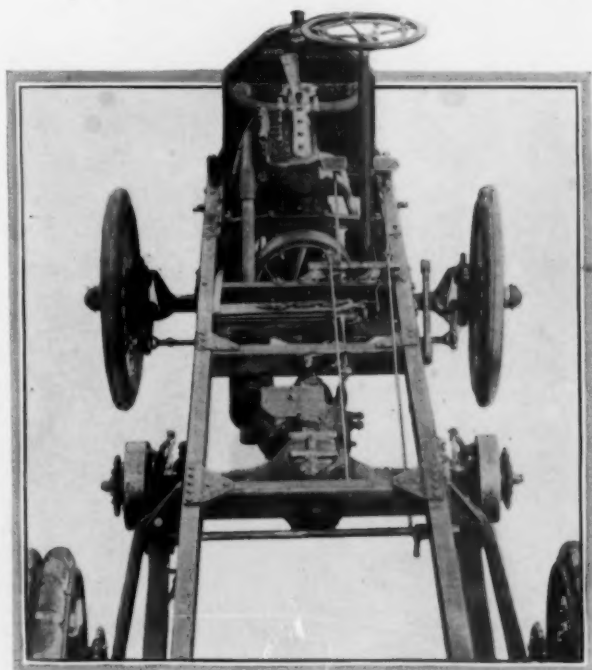
The two bearing crankshaft is an alloy steel member, crank pins  $2 \times 2\frac{3}{8}$  in. The main bearings are  $2\frac{1}{4} \times 3 \times 5-16$  in. front,  $2\frac{1}{4} \times 4$  in. at the rear. Bearings are plain die cast metal and in order to secure a perfect hard surface on the crank bearings, hardened steel sleeves are press fitted to place.

### Clutch

A cone clutch is used, this  $14 \times 1\frac{1}{2}$  in. facing asbestos, held in place through six T head bolts. The clutch hub is formed with an integral flange to which a cast steel member of similar design is bolted, thus forming a male and female joint.

### Frame

Frames are pressed steel, side rails in one ton car being continued beyond the rear cross member and in both cars are straight throughout. Overall length in the small car is 146 in., overhang from rear 24 in., this in the 2000 lb. model be-



Top View of Wichita Falls Chassis, showing symmetry of design; heavy 4 x 2" channel pressed-steel frame. The control plates are located directly in back of the clutch behind the frame cross member.

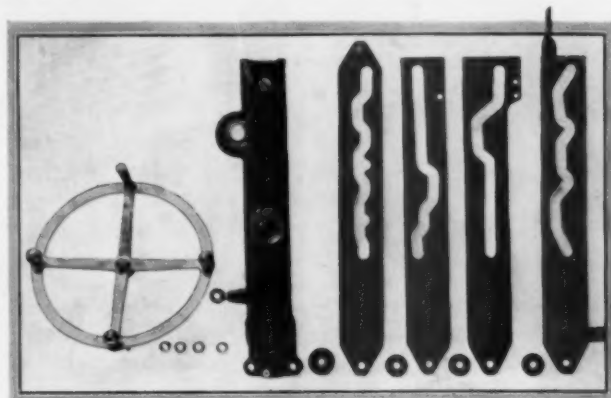


Wichita Falls Control System; four plates in position. Note the small sprocket at bottom of pinion shaft. Top plate controls the spark and throttle; second and third, the three speeds and reverse; bottom, the clutch. A foot button must be depressed to engage the reverse gears.

ing 44 in. Channel depth is 4 in., flanges 2 in. and stock 3-16 in. thick

### Wheels and Brakes

Wheels are wood artillery type, bearings cup and cone ball type. All wheels are 34 in. in diameter, 3 in. solid rubber tires used in the small car,  $3\frac{1}{2}$  in. front and 4 in. rear on the 2000 lb. model, but when so ordered the large car is to be had with  $3\frac{1}{2}$  in. Kelley dual equipment, this at an additional cost of \$125.



Four Control Plates of Wichita Falls Car. Cast-iron base with rack and pinion

There are two sets of brakes, jack shaft and rear wheel. Both sets are internal expanding, jack shaft  $10 \times 2$  in., rear wheels  $13\frac{3}{4} \times 3$  in. Emergency set in the rear wheels is worked through a pedal at the right, this being latched so that the brakes may be set as desired. The jack shaft brakes are worked through the clutch pedal, which is thrown clear forward after the clutch has been disengaged.

### Steering

A worm and sector system of steering is used, case cast steel. The post is vertical  $1\frac{1}{2}$  in. in diameter, fitted with a four aluminum spoked spider and mahogany rim. The cross connection is carried aft of the axle and is a  $\frac{3}{4}$  in. solid bar with an adjustable yoke, drag link 1 in. diameter, fitted with one spring forward, two at the rear to compensate for road shocks. Ball is  $1\frac{1}{4}$  in. in diameter.

### Bodies

The Wichita Falls chassis will be fitted with any type of body to meet purchaser's requirements. Loading space in the small car is  $68 \times 47 \times 78$  in.; large car stake body platform is  $72 \times 102$  in. Price of the 1200 lb. chassis is \$1450, 2000 lb. chassis \$750, f. o. b. Wichita Falls, Texas.

## The Poss Friction-Drive Half-Ton Delivery Car



THE simple form of friction drive is used in the Poss ½-ton delivery car, the product of the Poss Motor Company, 504 to 508 Howard Street, Detroit, Mich.

This concern was organized during the past year and begins business with a capital stock of \$300,000. Frank R. Poss, well known in Detroit, is president; Robert R. McKinley, treasurer, and Joseph Ness, who has been identified with the industry, is secretary.

### En Bloc Motor

The Poss delivery car is equipped with a four cylinder, vertical, water cooled, L-head engine, the cylinders cast en bloc with integral water jackets of ample dimensions, rating 25 h. p. at 1200 r. p. m., cylinders 3½ in. bore, 4¾ in. stroke.

long, seat beveled at 45 deg. Springs, of the usual type, are enclosed by plates.

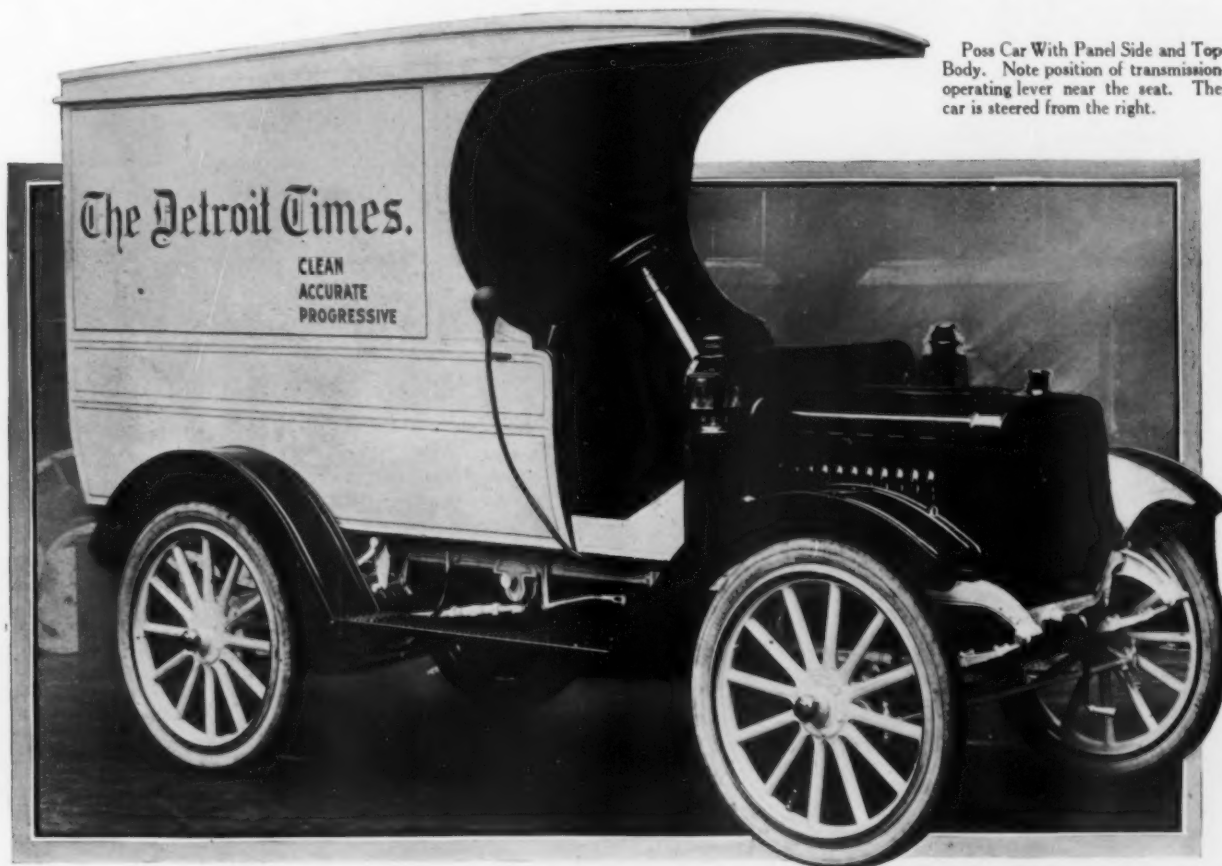
The pistons are fitted with three ¼ in. rings disposed above the pins, a single ring of the same size also located at the base; five oil grooves to each piston.

The bottom ring cares for excess oil on the cylinder walls which is scraped back and forced through six 3-32 in. drilled holes to the crank case.

Connecting rods are I-beam section, drop forged; pin bearings held with two 7-16 in. steel bolts, castle nuts and cotters. Wrist pin, clamped in the rod, is 7/8 in. diameter.

### Two-Bearing Shaft

Crank shaft, 35 point carbon steel, drop forged and double heat treated, is of two bearing type, main bearings



Poss Car With Panel Side and Top Body. Note position of transmission operating lever near the seat. The car is steered from the right.

The water jackets are cast with open top which permits of a neat casting as well as making it possible to thoroughly cleanse the jackets before the motor is assembled.

The valves, arranged on the left side, are worked from a single, solid cam shaft formed with an integral timing gear flange, member well supported in three 1¾ in. bearings. Valve lift is 5-16 in. and the sequence of fire is 1-2-4-3. Tappets are tool steel with face of 1⅜ in., guides ¾ in., phosphor bronze bushings, these seating in retainers cast with the cylinder block. Heads of valves are cast iron 1¾ in. diameter, the 7-16 steel stems operating in guides 2⅝ in.

2 in., front 3 in. long, rear 4 in., crank pins 15-16 x 1⅝ in. The shaft is offset ¾ in. and the fly wheel is keyed to place.

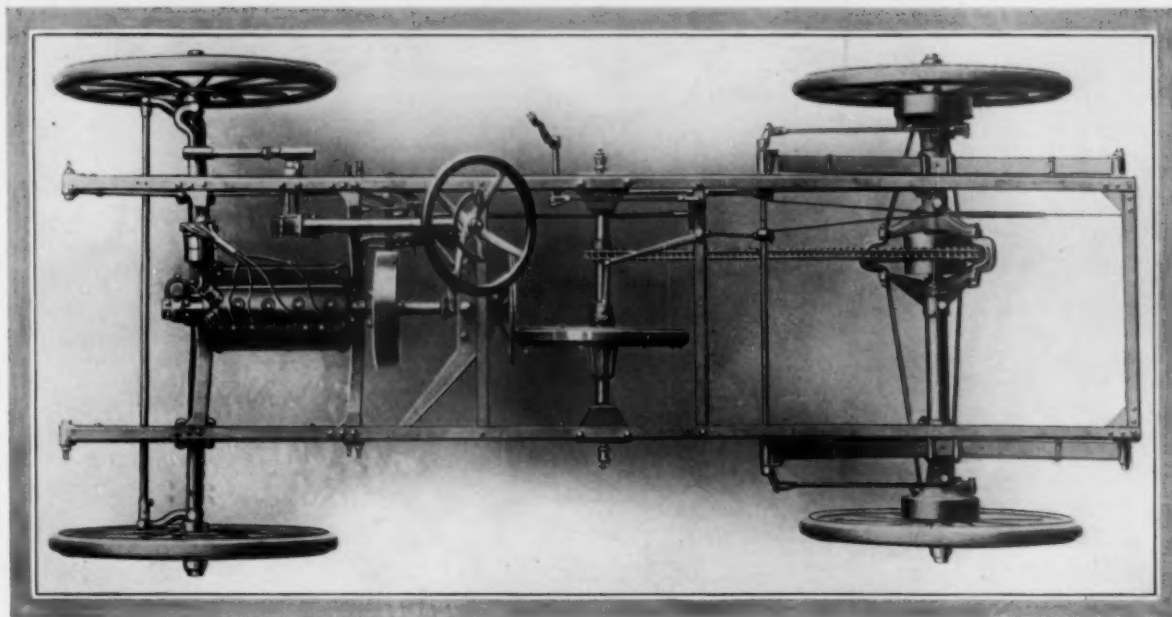
### Barrel Crank Case

Crank case is barrel type, cast iron, support through two cross arms to which case is attached front and rear. The magneto base and timing gear housing are formed with the case, gear cover being aluminum.

### Thermo-Syphon Cooling

Cooling is thermo syphon, cooler of flat tube type of symmetrical design sufficiently large for the service. Water intake on the cylinders is 2½ in. in diameter and the dome plate has two outlets 1¾ in. diameter, these being integral.





Top View of the Poss Chassis; showing the location of the motor and the friction transmission. Hand lever and operating cranks are shown

### Fixed Ignition

It has been deemed good practice in many cars to "fix" the ignition, as is the case in the Poss. The Dow magneto, secured to the crank case bed plate, is driven from the timing gears and is the source of current. With the set spark the driver has only to care for the throttle.

### Carburetor

Carburetor of standard make is attached to a Y-shaped manifold bolted to the cylinders, and is automatic in action, providing the necessary mixture when once adjusted, thus simplifying operation, which is desirable. The exhaust manifold is integral.

### Lubrication

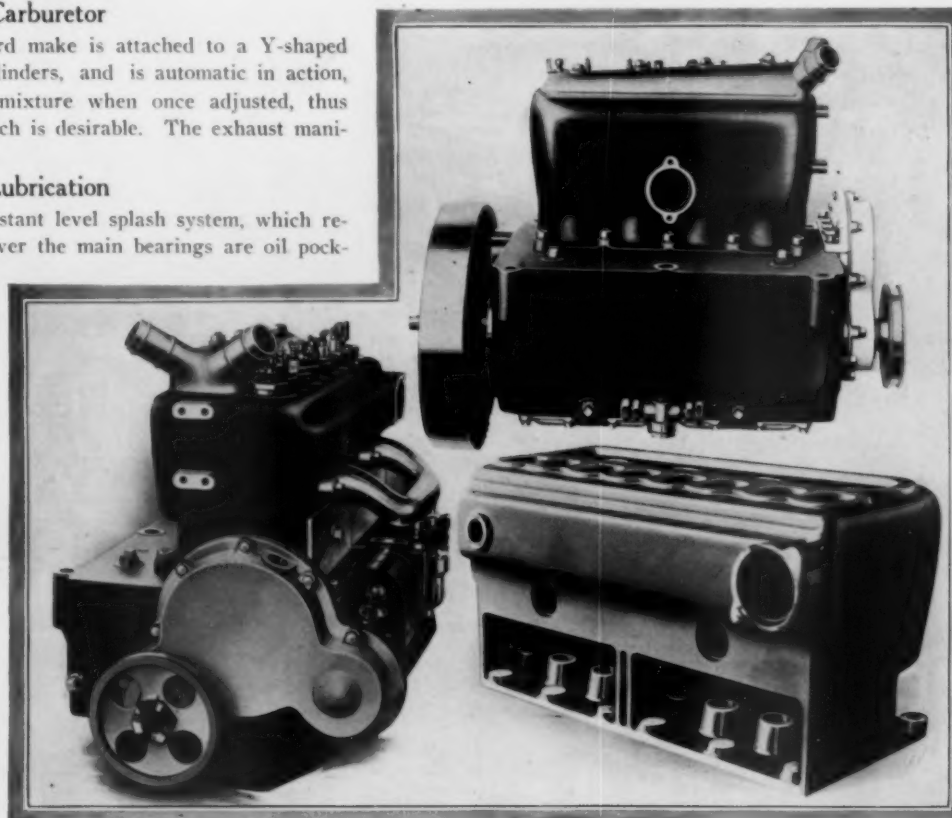
Lubrication is by constant level splash system, which requires little attention. Over the main bearings are oil pockets which trap the lubricant, thus feeding it direct to the bearings, the splash caring amply for the cylinder walls, excess, as above noted, forced back to the case by the bottom rings on the pistons. A reserve oil tank is cast with the crank case; this

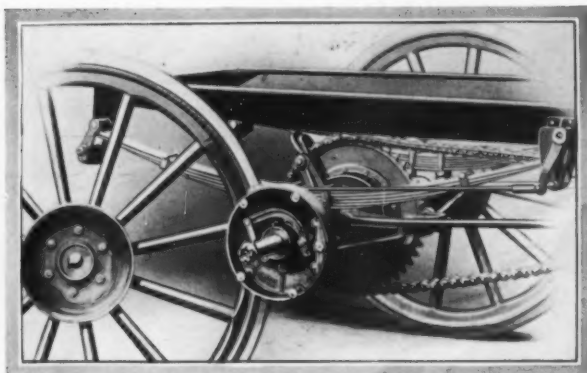
The Poss motor is block type with valves on the left side. Water jackets with open top are formed integral with cylinders; crank case is cast iron, barrel type and is supported by front and rear cross arms. Exhaust is cast with the cylinders but intake is separate. The water outlets are formed with the aluminum dome plate.

is  $1\frac{1}{2}$  gal. capacity, and, as required, oil is automatically supplied to the crank case.

### Friction Transmission

A salient feature of the Poss construction is the friction transmission, designed with a wide margin of safety so that in case of overload the system will be equal to the





Showing the driving chain, sprocket, rear wheel removed, brake drum and brakes, and rear spring

task. A spring drive is incorporated in the fly wheel, the spring formed of Jessup steel, 2 x 1-16 in., partially seats in the fly wheel, and is secured to a short shaft, 1 7-16 in. diameter at the rear end of which is the cast iron driving disc 14 1/2 in. diameter. A malleable iron tree, or triangular brace, serves as the anchor for the disc shaft bracket. The tree itself is secured to the cross member and each of the frame rails.

The main shaft of the transmission is 40 point carbon steel, heat treated, 1 13-16 in. diameter, and the cast iron friction disc is both keyed and pinned. A thrust bearing 4 in. in diameter, which seats in the hub of the disc, is employed, this having 1/2 in. steel balls, radial bearing, a 4 in. Hyatt high duty type, with 3/4 in. rolls.

The friction, or driven wheel, is cast iron, 7 3/4 in. hub, wheel diameter 22 in., facing fibre, retained by metal ring and bolts. The cross or main shaft is supported in cast steel housings carried in the side rails of the frame; out-board bearings are Hyatt roller, 5/8 in. rolls.

In operation the system follows the usual practice. The driven wheel slides along the cross-shaft to the right or left of center, as the direction of the car may indicate. When the system is idle there is a space of 1-32 in. between the driving and driven members, contact being formed when a pedal is pressed, this locked to any desired position.

### Rear Axle

Final drive is through a single Whitney roller chain 5/8 x 5/8 x 1 in. pitch. In laying down the rear axle the idea has been to ensure a liberal factor of safety. The driving axle is 1 3/8 in. diameter, housed in a steel tube 2 3/4 in. diameter; steel truss rods 7-16 in. diameter are used.

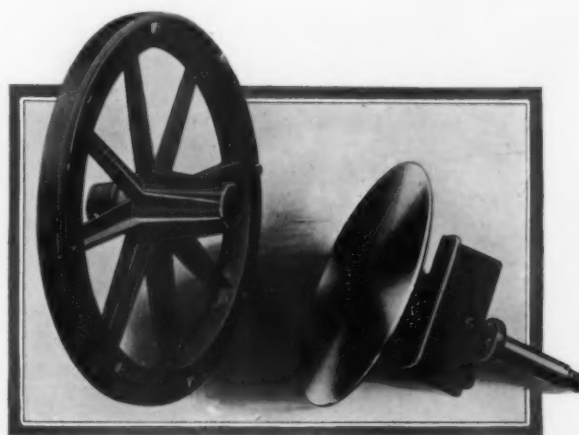
Radius rods are round and 3/4 in. diameter, yoked forward and secured to the spring saddles at rear.

### Pressed-Steel Frame

Frame, pressed steel, 135 in. overall, 3 9-16 x 5-32, is formed with broad flanges; side rails straight throughout and including the two cast steel motor hangers, there are seven cross members; gussets at the rear.

### Front Axle

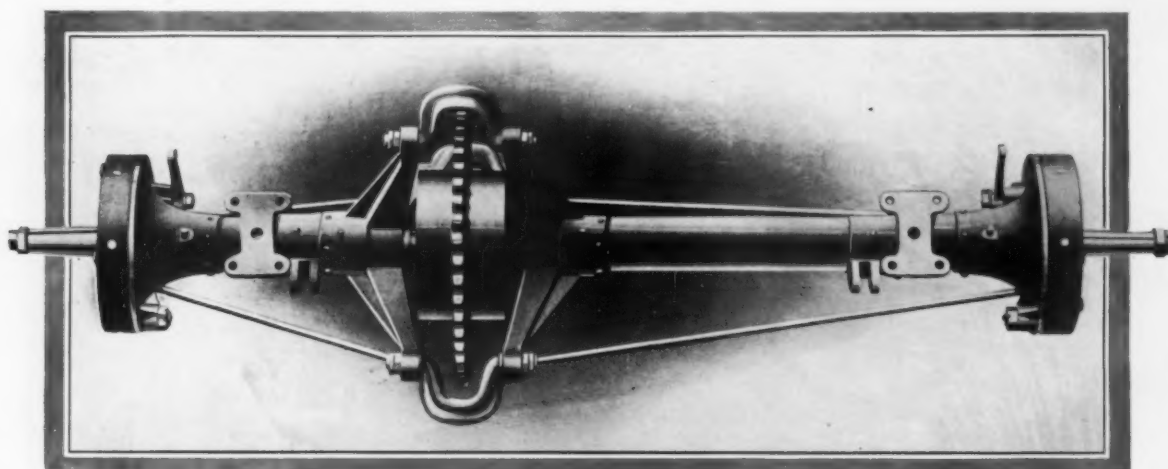
Front axle is tubular, 2 in. diameter, 5-16 in. wall, 3 in. drop at center, knuckles forged nickel steel, electrically welded to the axle.



The Driving and Driven Discs of the Pos Friction Transmission. The driving member is shown assembled with shaft. Wheel facing is fiber and is retained by a metal ring and bolts; wheel slides on cross shaft.

### Springs

Semi-elliptic springs are used front and rear, fronts 36 x 1 3/4 in., six leaves, perched off center 16 in. from front,



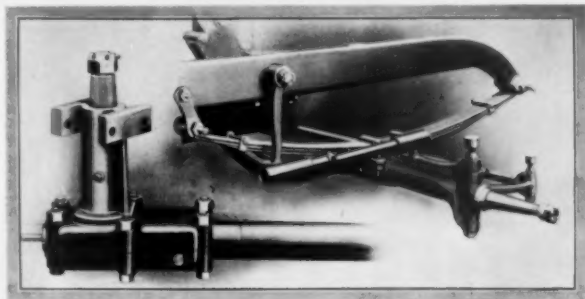
Rear Axle. With Driving Sprocket, Brakes and Differential. The driving member is enclosed and the construction is braced by steel rods

20 in. from rear. Steel plate shackles are used at the rear ends, front anchorage to the frame ends.

Rear springs are 45 x 2 in., nine leaves, front opening 2 in.; rear, 3 in.

### Wheels and Tires

When pneumatics are fitted wheels are 34 in.,  $3\frac{1}{2}$  in. tires front and rear; with solid equipment wheel diameter is 36 in., tires  $2\frac{1}{2}$  in. Tread is 56 in. and wheel base 98 in. There are twelve  $1\frac{1}{2}$  in. spokes, hub flanges  $6\frac{1}{2}$  in.



Steering Assembly: worm and split-nut system is used; gear case secured to the frame; drag link is fitted with ball and socket joints

Front bearings are cup and cone ball,  $\frac{5}{8}$  and  $\frac{1}{2}$  in. steel balls used. Rear wheel bearings are Hyatt roller, and front and rear spindles are  $1\frac{3}{8}$  in.

### Steering and Brakes

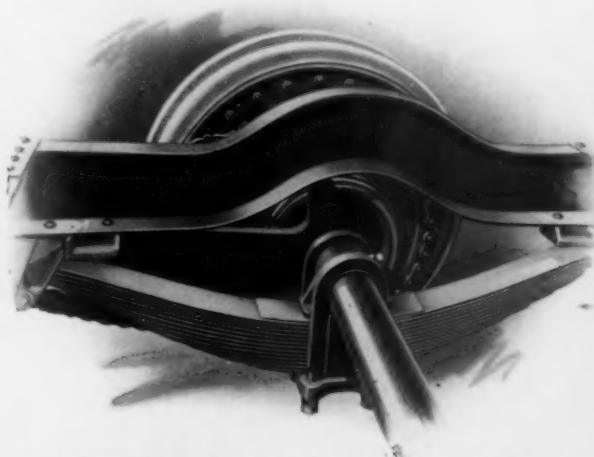
Steering is through worm and split nut system, post  $1\frac{3}{4}$  in., wheel 16 in., throttle above the wheel. Drive is from the right, cross rod is before the axle and is  $\frac{3}{4}$  in. diameter, drag link is fitted with ball and socket joints. Steering lever ball is  $1\frac{1}{8}$  in. in diameter.

Internal expanding service brakes in the rear wheels are 12 x  $2\frac{1}{2}$  in., operation through  $\frac{3}{8}$  in. steel rods and equalizer. For emergency, the friction is employed, which affords as positive a device as is had on reversing a steam engine. Drivers of friction cars lay particular stress upon this one feature, which has on many occasions proven useful.

### Control

In a car of this type it is essential that control be as simple as possible. With the spark fixed and only the throttle to care for the car is easily looked to. As before mentioned, the driven wheel is slid along the cross shaft on a key and the contact is made by pedal.

The Poss chassis with open express body is to be had for \$800, fitted with solid tires; open express with detachable top is \$850; open express with pneumatic tires, \$875, same with detachable top, \$925. Loading space in express body is 38 x 66 in.; panel type 38 x 63 in. Prices are f. o. b. Detroit, Mich.



G. M. C. Underslung Chassis, Showing How the Rear Springs Are Suspended From the Axle, Which Brings the Frame Closer to the Road

Ever progressive, the General Motors Truck Company, of Detroit, Mich., has introduced an underslung chassis, so called, featured in three and a half and five-ton types. In either case the motor is four-cylinder L-head type. The idea sought in this new type of chassis is to reduce distance from the top of the frame to the ground; and, ostensibly, lowering the body, which is effected by suspending the springs from the axle as shown in an accompanying illustration, rather than having them rest on the axle pads as in the usual practice. Then too, the side rails of the frame are cranked up over the axle, as is often done in pleasure practice. This type of construction is especially adapted to the heavier loads, where much is gained by having the load as near the ground as possible. The wheel base in both the three and a half and five-ton sizes is 138 in. Motor, transmission and other components of the regular G. M. C. chassis were completely described in the November issue of the Commercial Car Journal.



Kelly Truck in Coal Business

The P. Koenig Coal Company, of Detroit, Mich., employs a three-ton blower-cooled Kelly four-cylinder car for their service, and state that it has done very good work. The car has now been in service since autumn and has been successfully employed throughout the past winter, which was one of the most severe Detroit has experienced in many years. The Koenig yards are equipped with two steam shovels and loading is therefore a matter of a very short time.

In the June issue of the CCJ special articles will be published on the use of the commercial car in hauling, such as is done by express companies and other concerns who make a living by hauling merchandise of all descriptions.



# TRUCK ACCESSORIES AND APPLIANCES

## BUCKEYE TRUCK JACKS

The Buckeye Jack Manufacturing Company, of Alliance, O., manufactures a line of motor truck jacks consisting of four sizes, having capacities of 1½, 2½, 3 and 5 tons, and listing at \$6, \$10, \$15 and \$16.

The Buckeye jack is made from the highest grade of malleable iron and high carbon steel drop forgings heat treated. Each jack is fitted with a spacious top on the rack so that the paint on the car will not be marred or injured. It operates at any angle. The jack is enamel finish, baked on, insuring a hard, rich finish.



Buckeye Motor Truck Jack No. 14. Made by the Buckeye Jack Manufacturing Company, of Alliance, Ohio. Other sizes are Nos. 7, 9 and 13, suitable for all sizes of commercial vehicles, from the light delivery wagon to the heaviest truck made.



The Ellis Gasoline Purifier. Made by the National Sales Company, of 45 Milk Street, Boston, Mass. It is furnished with two brass unions of either ¼, 5-16, or 3-8 in. outside diameter pipe size. It lists at \$3.50.

## THE CRONE VAPORIZER

This device is designed to vaporize gasoline to such an extent that it is impossible for raw gasoline or an undiluted mixture to reach the cylinders. The vaporizer is tubular in form and has a vaporizing surface according to size, from

150 to 1000 sq. in., which is compact in a small space. The device does not produce back pressure, nor will it clog up. The manufacturer claims that it will almost reduce the gasoline consumption to one-half. It is made by F. G. Crone, 334-38 Genesee Street, Buffalo, N. Y.

## THE M AND M ECONOMIZER AND CONTROLLER

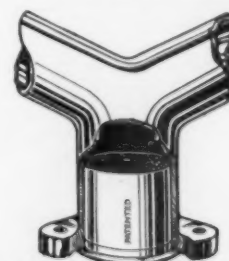
This device is designed to eliminate wasteful use of gasoline and ignition current either when coasting and slowing up at street crossings, or when running slowly in heavy traffic. By opening a valve air is allowed to enter the cylinders and at the same time the ignition is cut off. With this device it is unnecessary to disengage the clutch when coasting, as the motor can be used in lieu of the brake. It also allows instant control of the motor, as pressure on the foot pedal instantly disconnects the ignition current and the mixture. The outfit is manufactured by the Moller Brothers, 700 Betz Building, Philadelphia.



The M and M Controller and Economizer—Moller Brothers, 700 Betz Building, Philadelphia. This device is screwed into the intake manifold pipe and is operated by foot pedal on the floor board. It is easily attached and not only saves gas but also cuts out the ignition current when coasting down hill. The device, complete, lists at \$3.50.

## THE ELLIS GASOLINE PURIFIER

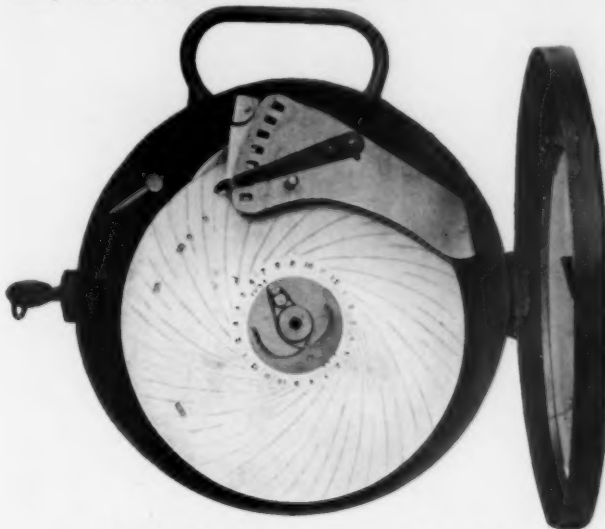
This device is made of aluminum composition, weighs about six ounces, including brass unions, and is inserted in a convenient place in the gasoline supply pipe between the reservoir and the carburetor. The gasoline first enters the precipitation chamber, or pocket, shown in the cut, then it is filtered through two fine screens, two felts and quartz, whereby all dirt and small particles of paraffin are caught and held. Any water in the gasoline will find lodgment in the precipitation chamber, and by removing the thumb screw any water or particles of sediment can be periodically released. The purifier lists at \$3.50, and is manufactured by the National Sales Company, 45 Milk Street, Boston, Mass.



The Crone Vaporizer—F. G. Crone, Buffalo, N. Y. This device is made to slip in the manifold; but to get better results it is made up in cage form, which gives more vaporizing surface. The vaporizer contains from 150 to 1000 sq. in. of vaporizing surface.

## THE "TRAVELOG"—A NEW RECORDING INSTRUMENT FOR TRUCKS

The "Travelog," as its name implies, is an instrument designed to record the movement of a truck or other commercial vehicle in such a manner that a complete record of the truck's movements for either a day or a week may be easily read from a dial or recording chart.



The "Travelog." Made by W. H. Brown, 706 Rose Building, Cleveland, Ohio. This instrument is designed for use on trucks, for recording the movement of the vehicle, stops made, etc. The instrument is not connected with the running gear of the car, but works entirely through vibration.

This instrument is claimed to be extraordinarily reliable, for the reason that it does not depend upon the rotation of the front wheel to make the record, which is made entirely



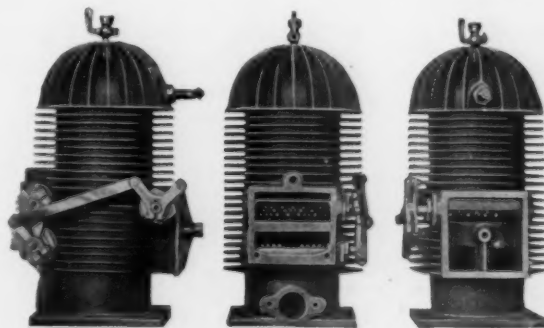
Section of Recording Dial Used in the "Travelog;" showing markings made by various conditions of running; made by W. H. Brown, 706 Rose Building, Cleveland, Ohio. The wide marks show when the car is running while the small lines show that the car is standing still, motor running.

through the vibrations imparted to the instrument due to the actual movement of the truck. Each chart is good for seven days' continuous night and day performance. The recording charts are made from treated paper, the surface of which when rubbed by the hard stylus, is bruised and produces a dark line somewhat on the order of carbon copying paper. The mechanism which revolves the recording dial, consists of an eight day, eleven jewel standard Howard clock movement enclosed in a pressed steel case and secured with a Yale lock. The dial revolves once in twenty-four hours. The instrument is 7½ in. in diameter, 3 in. deep and weighs 7 lbs. It lists at \$75.

## THE PALMER-MOORE TWO-CYCLE MOTOR

This motor, which has been designed for commercial car service, is of the two cycle, three port type, and has the very desirable and practical feature of a variable speed control. In other words, the motor may be effectively operated as a low, medium or high speed motor, the latter being required only for hard service conditions, as in negotiation of grades and the like. Fuel economy is another advantage claimed, this by reason of the fact that the motor consumes the fuel only in proportion to the power developed, according as it is operated as a low, medium or high speed motor. It is also asserted by the makers that the inherent disadvantages of ordinary type of two cycle engines have been overcome by the rotary valve, or shutter arrangement, which makes it possible to vary the areas of the ports.

The three ports each have three rows of staggered holes, which makes the three speeds. For example, the first row

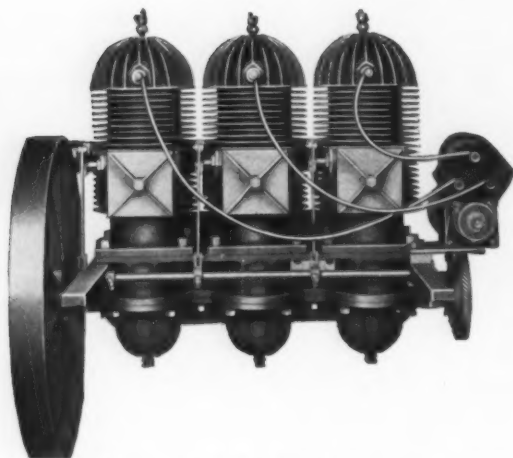


The Palmer-Moore Three-Port Two-Cycle Motor—Palmer-Moore Company, Syracuse, N. Y. Three views showing the rotary shutter operating mechanism; also the shutters as they are seen when the cover plates are removed.

only is uncovered for the low speed, the second also is uncovered for medium speed, and when the rotary valves, or shutters, are fully opened, or the three rows of holes fully uncovered, the engine is working at its high speed.

These rotary valves, or shutters, coincide with one another, in action, as for instance, when the first row of holes has been uncovered in the primary intake port, so have the first row in the exhaust port and also in the final intake, or by-pass port. The ports may be varied in size, according to the need of the service, and whatever the opening may be, large or small, it is claimed that the engine always is working to the best advantage.

The carburetor is set at a fixed opening and delivers into a specially designed manifold which increases the travel of the gases and gives them a chance to heat before entering



The Palmer-Moore Two-Cycle Motor. Exterior view, showing the shutter mechanism, which operates all three shutters simultaneously, and the magneto mounting and gear drive.

the cylinders. The driver controls the motor simply by varying the port areas to produce a high, medium or slow speed motor, as the conditions may demand. A single control lever on the steering wheel, similar to the throttle of a four cycle motor, is provided for this purpose.

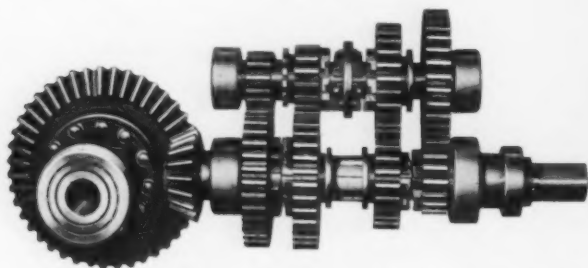
Ignition occurs at a fixed point of the stroke and is produced from a magneto geared onto the main shaft. The motor is air cooled, with fan in fly wheel.

The construction of the crank case permits removal of the bottom half for inspection or bearing adjustments. Lubrication is accomplished by mixing the cylinder oil with the gasoline in the fuel tank. The Palmer-Moore motor is manufactured by the Palmer-Moore Company, Syracuse, N. Y.

### THE COTTA SHORT SERIES Individual Clutch Truck Transmission

The Cotta Gear Manufacturing Company, Rockford, Ill., features for commercial cars, a three-speed transmission known as the Cotta Short Series Individual Clutch Type. This unit is the design of Charles Cotta, who is well known in the motor car industry. The construction of this Cotta transmission is set forth in an accompanying illustration. It is designed for use in cars up to four tons capacity.

The main shaft in this gear set is 2 3/16 in. on the splines, 1 7/8 in. on the small diameter. The counter shaft is 1 7/8 in. diameter and the standard equipment includes New Departure ball bearings and Brown & Lipe differential. All gears of this Cotta set are 5-6 pitch, face 1 1/4 in. The master bevel and pinion are 1 1/2 in. face, 4 pitch.



Cotta Short Series Individual Clutch Transmission; for use on commercial cars up to four tons capacity

This set affords three speeds and reverse, and in each, speed changes are made by individual clutches of the jaw type. Operation is arranged by having two pairs of slidable gears, one gear of each pair being mounted slidably on the spline shaft, the other member of the pair being mounted slidably and rotatable on the counter shaft. The front pair of gears used for the high and intermediate speeds have a clutch face on the forward side of the gear on the main shaft, this is for the high speed; and the gear on the counter shaft has a clutch face on the opposite side for engagement with a double ended clutch collar fixed on the counter shaft. The gear on the counter shaft of the other pair of gears has a clutch face on the forward side which is adapted to engage also with a double ended clutch collar for the first speed and the other gear of the pair on the splined shaft has a clutch face on the rear side which is adapted to engage with the reverse speed gear. The transmission is very compact in design and the construction throughout is heavy, ensuring strength where it is most needed. The bearings of the loose gears on the counter shaft are very long and liberal in dimensions, ensuring ample bearing surface, which is quite essential to satisfactory truck service. These gears run on hardened and ground surfaces of the shaft.

The transmission is operated in the usual manner by a hand side lever same as in the ordinary sliding gear types. The gear box is made of aluminum and the differential is mounted in a separate compartment, the dividing walls containing the bearings, ensuring perfect alignment. The top of the gear case and the rear of the differential housing are closed in with cover plates and there are oil plugs at the bottom of the case.

Jack shafts are 1 5/8 in. diameter and aggregate contact is over two square inches on the clutch teeth, as against the single point contact in the sliding gear types, and in this short series individual clutch set the gear teeth are relieved of the clash strains which necessarily means longer wear and life.

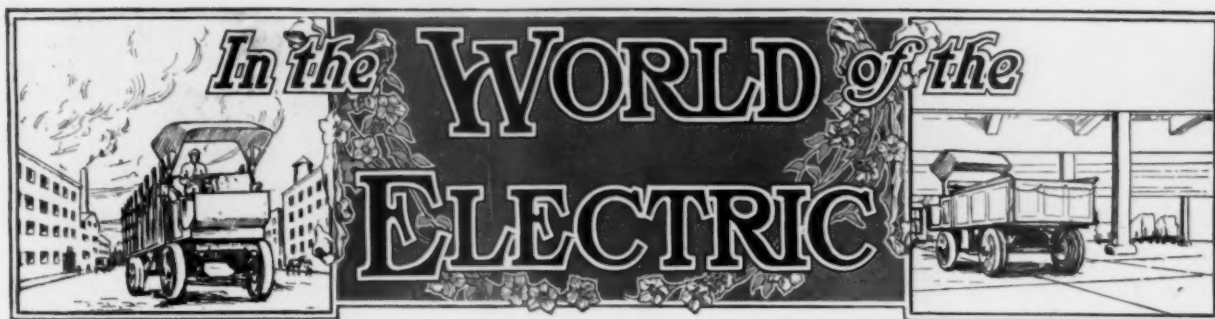
This set is adapted to various types of commercial cars, and information may be had by addressing the company at Rockford, Ill.



New Motor Car Hearse

Motor car hearse, a new adaptation of the motor truck. Made by the Autocar Company, Ardmore, Pa., for a New York undertaking establishment. The chassis is the regular Autocar Delivery Car chassis.





## Electric Ambulances in Service in New York City

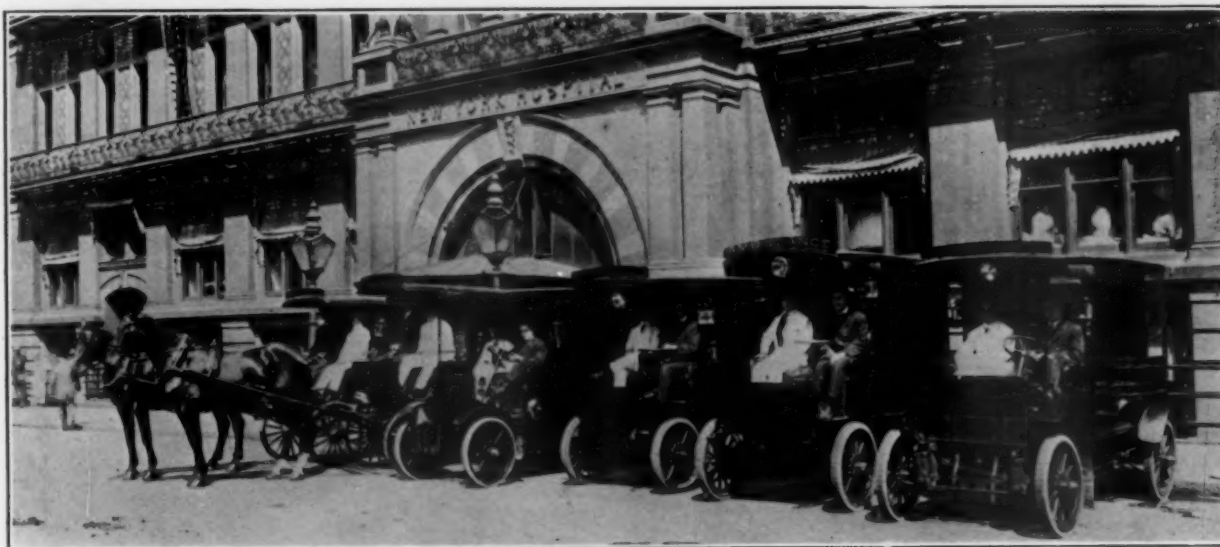
BY HARVEY ROBINSON



**C**ONTRAST a city's ambulance service of today with that of forty, or twenty, or even ten years ago. What a difference! Today there is the speedy motor car that tears through the street at hair-raising speed. Forty years ago an ambulance was unheard of—twenty years ago ambulances were drawn by horses—and ten years ago the motor ambulance was in the experimental stage of its development.

The motor has proved its worth, and now is being adopted by hospitals, large and small, all over the country. This is particularly true in New York, where almost thirty per cent.

The history of the growth of the ambulance service in New York is of rare interest. Picture if possible, a passenger falling from one of the Broadway stage coaches of fifty years ago. Was there a hurriedly telephoned message for medical aid—and a stir of excitement all along the way as an ambulance and its white clad surgeon rushed to the scene of the accident? In the first place there were no telephones, and if there had been, there would have been no one to call upon. The hospitals of that period, willing as they might have been to help, were not equipped to send out for accident victims. Nor had the city made any arrangements for taking injured persons to hospitals.



The Ambulance Equipment of the New York Hospital. Electrics have been displacing horses at this institution since 1905

of all the ambulances in the hospital service are motor driven. Sixteen of these are gasoline cars and twelve are electrics. The rest of the ninety-five are pulled through the streets by horses. Where the equipment consists of electrics and horses, there is in almost every case, an accepted plan to add to the installation of electrics as the horses pass their usefulness. Necessity of economy prevents any hospital casting off its horse equipment outright; for although the horses might be sold, there is little demand for a second hand horse-drawn ambulance.

The unfortunate was entirely dependent on the sympathies of the crowd that gathered to stare at his misfortune, and unless there was one with the spirit of the Samaritan, he was likely to fare ill. If there was one such, a shutter was ripped from the nearest store, the injured one was laid tenderly upon it, and with someone to help carry the improvised litter, the journey to the hospital was begun—on foot. Another method was to impress the nearest market wagon, a low set, two wheeled vehicle that was to be found on almost any cor-

ner. Sometimes the horse was attached—if he was not, there were men willing to pull, with the same enthusiasm they manifested when called upon to roll their apparatus to a fire. No matter which vehicle was used, the patient was always certain to have a pretty rough ride. His lot, however, was not as bad as that of the man who fell among persons less willing to aid, for robbery was no less common in those days than it is now.

Ambulances made their first appearance in the early seventies, when certain of the hospitals purchased them for the more comfortable transfer of private patients between home and the institution. The street accident victim, however, was in as bad a plight as he had ever been in, for there were no better facilities for bringing him aid. At the same time the chances for the man who walked through the street, meeting an accident had greatly increased, for the horse and cable car and the elevated railroad had made their appearance in the city. It was during this period of civic growth that the city, aroused to its responsibilities, purchased a number of ambulances and assigned them to various hospitals. One of these is still in service. It was purchased in 1878 by the City of Brooklyn, and loaned to the Long Island College Hospital.

Could someone write the biography of that vehicle, what an interesting tale would be told. This ambulance covered, and still covers a water-front district where accidents among the shipping are common. Persons suffering from immersion have been resuscitated in the 'bus, patients have died in it and children have been born in it, and still it goes clanging on its way, bringing aid to the stricken.

From that grandfather of ambulances grew an equipment that extended to every hospital in the city; and then came another change that is revolutionizing the entire service once more.

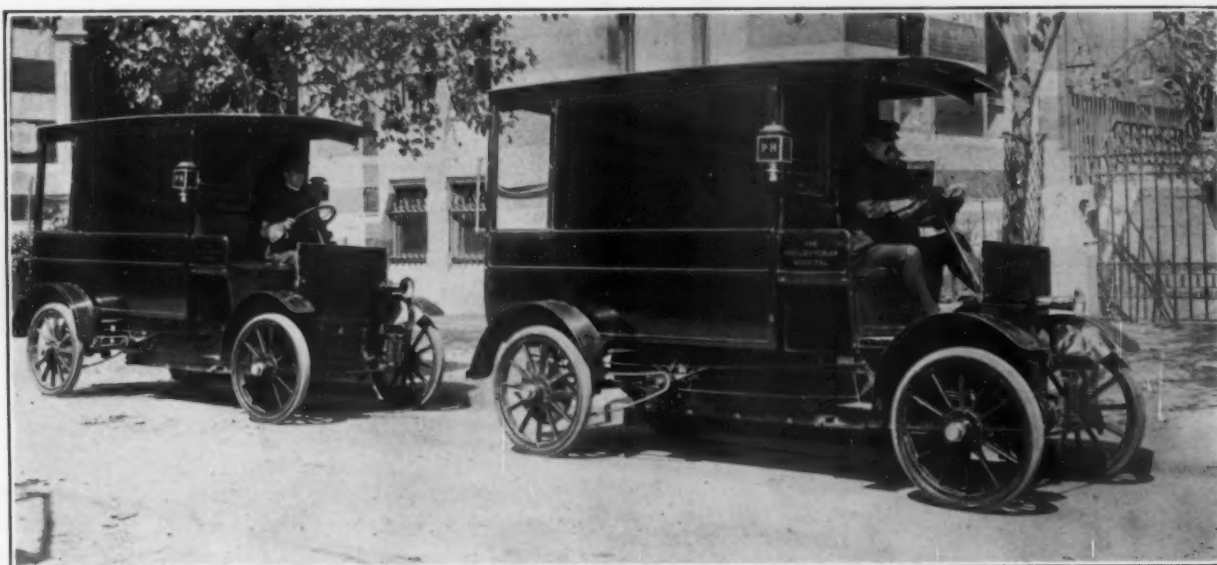
Thirteen years ago an electric ambulance was donated to St. Vincent's Hospital. It served well for five years, and then required an overhauling. Just about this time, another benefactor, with strong tendencies toward gasoline cars, made his donation to the hospital, and the electric passed out.



Electric Ambulance Climbing a Grade in Front of the Garage at Mount Sinai Hospital, New York City. This electric has been in constant service for ten years.

In 1902, the second electric ambulance in New York was purchased by Mount Sinai Hospital. This electric, a General vehicle, which might well be called the dean of modern ambulances, is still in service, and so much confidence have the hospital authorities in its reliability, that they maintain no other ambulance; not even a horse.

The Society of The New York Hospital is the oldest institution of this kind in New York, having received its charter away back in the Colonial days. It maintains two hospitals, the New York Hospital on West 16th Street, and the House of Relief, on Hudson Street. Four electric and three horse ambulances are required to handle the private and emergency work of these two institutions. Two of the electrics are Lansdens and two are G. V.'s. One of the latter is assigned to the House of Relief. It was placed in service in July of last year, and during its first three months answered twelve hundred calls, making its runs over some of the roughest streets in New York. The district covered by this ambulance includes sixteen miles of water-front and all the inter-



Electric Ambulances Recently Placed in Service at the Presbyterian Hospital, New York City, For Both Emergency and Private Work

lying territory at the southern end of Manhattan Island. Almost all the streets in the territory are paved with blocks, because the heaviest trucking of the city—that between the piers and the wholesale house—is here. This ambulance was the first to reach the Equitable Building at the time of the disastrous fire in January. The first of the New York Hospital ambulances was placed in service in 1905, another was added in 1908, and two more in 1910. These four electrics answered the bulk of 11,600 calls during 1911.

The years 1910 and 1911 saw a great increase in the installation of electric ambulances in New York. The Presbyterian Hospital purchased two Lansdens in August, 1910. The Department of Charities assigned a Lansden to Bellevue Hospital in July, 1910, and a Detroit to the Harlem Hospital in 1911. The Kings County Hospital in Brooklyn has used a Studebaker for three years, and the Methodist Episcopal Hospital purchased a Detroit last year. The hospital of the Rockefeller Institute purchased a Detroit in February to use in transferring patients from other institutions. Patients

taken to this hospital are, as a general thing, suffering from some malady that requires special care and treatment, so every precaution is taken to insure the invalid a safe and comfortable journey to the institution.

There are many factors that make the electric especially desirable for ambulance service. The first of these is its cleanliness, and the consequent cleanliness of its attendants—both the driver and the doctor. It is almost as important for the driver to be clean as it is for the surgeon, and in almost every case he is called upon to help handle the patient.

Another factor in favor of the electric over the horse ambulance is the steadily decreasing cost of current, due to the growing use of electrics of all types and the constantly increasing cost of grain and oats. During the past five years in the Eastern cities the cost of current has been reduced almost twenty per cent., while the horse fodder has gone up seventeen per cent. during the same period. These figures are quoted on the authority of the Electric Vehicle Association of America.

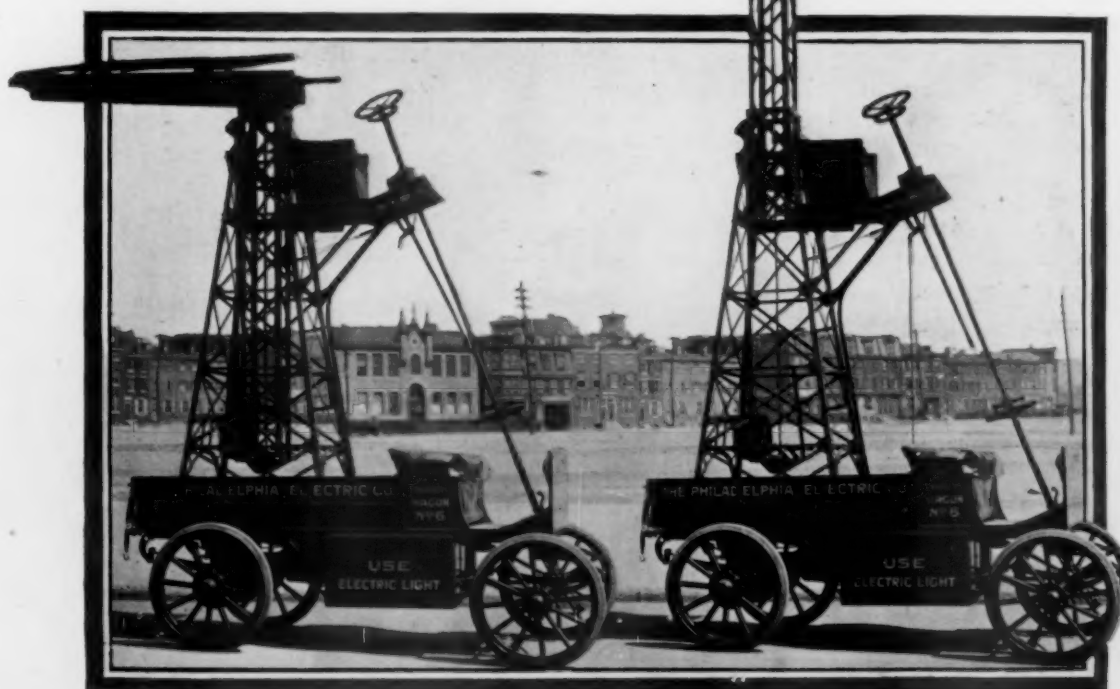
## The New Tower Wagons in Philadelphia

The electric tower wagons employed by the Philadelphia Electric Company by the lamp trimmers, have been illustrated and described in these columns. The new placing of the lamps on the elevated structure has, however, brought about new conditions which have necessitated novel changes in these unique vehicles. At places the lamps will be twenty feet above the pavement and at other places thirty feet or more, these high spots being out of reach of the present power wagons. To take care of this service a new type of movable platform tower wagon has been designed.

The platform really constitutes an elevator operated by a motor from the storage battery of the truck. The whole is

under the control of the driver from the platform, so that he can readily raise the platform and himself 6 ft. or more above the top of the tower, enabling him to reach without a ladder the highest lamps. The tower portion is a telescoping structure

which is raised and lowered by an electric motor near the base of the tower. As in previous models, these wagons can be steered and braked from the elevated platform. A single ladder is carried on the wagon for use in emergency cases when trucks or vans are in the way so that the lights cannot be reached otherwise.





## The M & P One Thousand Pound Electric

A 1000 lb. electric delivery car known as the M & P Electric was recently introduced at Detroit, Mich., and shown for the first time at the commercial car division of the Chicago Show. The M & P is the product of the M & P Electric Vehicle Company, which is located at Franklin and Du Bois Streets, Detroit, Mich.

Charles L. Pepper is president of the new company and has been actively identified with the bicycle and motor car industries for the past 27 years. M. C. Merriman, who has been affiliated with various well-known concerns and hav-

Attention is called to the parts illustrations. The motor is attached by means of cast steel plates which are bolted to the front and rear. The rear spring brackets, too, are out of the ordinary and worthy of more than passing notice.

The M & P chassis only, sells for \$1350; open express for \$1400; panel and top types for \$1500.

The frame is standard 3-in. channel steel reinforced by cross members and hot riveted; front and rear springs are full elliptic, 40 x 2 x 8 in., rear; 36 x 2 x 8 in., front. The axle is drop forged I-beam, integral yokes and steering jaws. 1 5/8 in. spindle, cup and cone bearings, 30 in. wheels, twelve 2 in. spokes front and rear; tires optional, 2 1/2 in. solid or 3 1/4 in. pneumatic; driving chains are 1 in. pitch, 5/8 x 5/8 in. rolls; jack shaft sprockets, steel forgings. There is the usual provision for adjusting the driving chains.



**M & P Flare-Board Express Car**

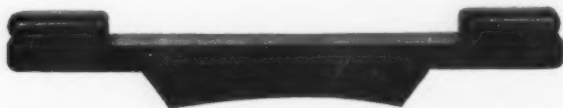
Showing the controller handle at the left side of the seat. This works in a Z slot and actuates a Westinghouse drum type continuous torque instrument under the driver's seat, affording four forward and two reverse speeds. Maximum speed is 12 m.p.h.; maximum motor speed, 1500 r.p.m. Regular steering equipment is vertical 1 3/4 in. post, 15 in. wheel, worm and sector system, 1 in. drag link and cross connection with spring buffer and ball and socket joints, and carried back of the axle. Model here shown is fitted with tiller. Chassis only is \$1350, this including the driver's seat; with express body, as herein shown, price is \$1400; with panel body \$1500. Wheel base is 100 in., tread 56 in. It will be noted that the batteries are underslung and disposed just forward of the jack shaft and easily reached from the side. The motor is within easy reach and the armature is accessible by removing a cover plate. The loading space of the car here shown is 3 1/2 x 6 1/2 ft.

ing to do with the sale of electric and gasoline cars, is treasurer and Burton Grandy is secretary.

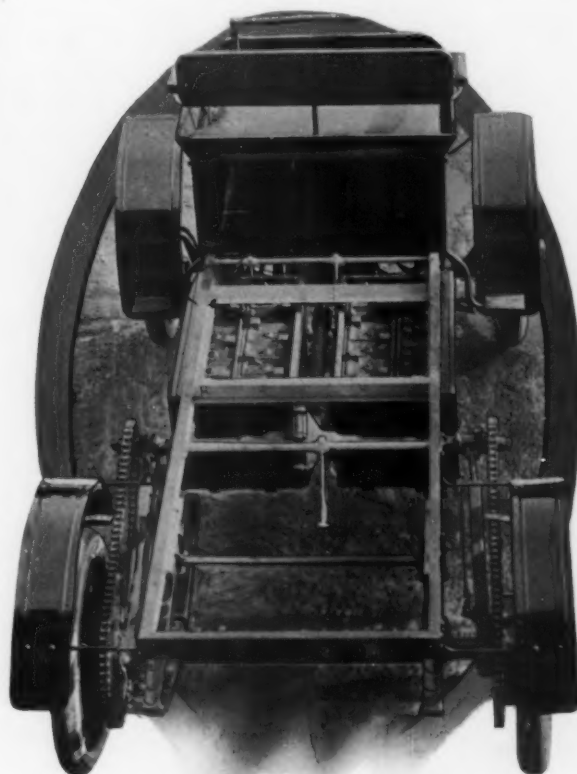
This 1000 lb. delivery car represents the ideas of Messrs. Pepper and Merriman, who have long considered the electric and its field of usefulness, and, realizing the need of a vehicle of this size, evolved the M & P.

In the accompanying illustrations are shown the construction of the M & P. The batteries of the Gould type are underslung and may be reached from either side of the chassis. The body is of a conventional type commonly used and well adapted to a car of this weight and capacity. Tires may be either pneumatic or solid, as the purchaser may desire.

In the views of the stripped chassis the construction is well shown, and one may note wherein the M & P differs.



**Bracket Used for Unique Anchorage of Springs on M & P Electric.** This block is permitted to slide along the frame to compensate for road fluctuations.



**View of Top of M & P Electric Chassis**

Disposition of the propeller shaft, which is enclosed in a steel tube. Batteries underslung and located on each side of shaft, forty cells, Gould, assembled in four trays, two trays each side, ten cells to a tray. Differential is bevel assembly, four pinions, 1 1/2-in. face of driving pinion and master bevel, bearing N. D. ball, jack shaft 1 1/2 in. Distance rod for the rear springs is shown.

A feature to which the makers call attention is the location of the motor amidships just back of the front axle drive to the jack shaft through Cardan shaft, the housing of which is supported in a bracket.

## Cost of Operating a Large Fleet of Electrics



AN interesting session of the Electric Vehicle Association of America at the Engineers' Building, New York City, April 24, the paper of the evening was by Charles A. Ward, of the Ward Bread Company, New York. Extracts from the paper follow:

### The Electric Vehicle Equipment

The equipment under immediate consideration, that of the Bronx plant of the Ward Bread Company, comprises one hundred one-thousand pound wagons.

### The Garage and Shipping Department

The shipping department occupies the main or street floor of the bread plant. A square central portion surrounded by brick and glass partitions comprises the shipping department proper, then the loading platform and finally the outer and larger space occupied by the vehicles themselves, as shown in the accompanying illustration. Attention is directed to the cleanliness of the passage-ways due to the absence of horses. This is an important feature as viewed by the bread manufacturer.

### Charging

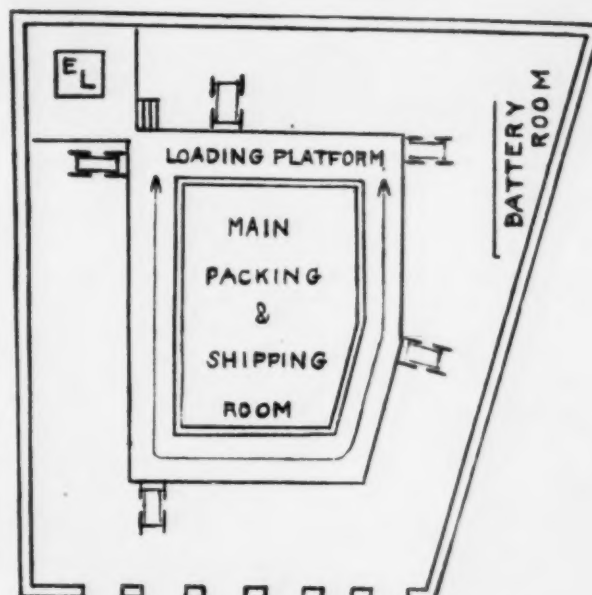
From each switch on the charging board there runs, through a charging rheostat, a pair of cables terminating in a charging plug just beneath the loading platform, and up to which all vehicles are backed. Each plug is plainly numbered and corresponds with a similar number on a corresponding switch at the charging board. As all vehicles are also numbered, one can readily see how easily the charging records for the various vehicles may be kept. Even when all the vehicles are on charge at one time, one man can make the proper current adjustments, and mark his cards.

### The Record Cards

Three sets of records are kept, namely, a daily vehicle report card, a five weeks' report card and a parts renewal card. The vehicle report card is used daily by each vehicle operator. A clean record to be found in a pocket in the front of the vehicle is a notification to the operator that his car has been properly inspected, repaired, washed and charged, and is ready for use. Should no card be found he makes immediate inquiry of the garage superintendent. Should his car have to remain in the garage a substitute for his use for that day or until his regular car has been repaired is supplied.

The above records are kept by the operator through the day. It bears his name, vehicle number, number of trips, total mileage, condition of the vehicle when turned in, also report of accidents. The garage superintendent then has men care for the car and turn it over to the Washing Department, after which it is charged. Records are made of volts, amperes, hours and time required to charge the battery, so that the totalized costs on the record card represent all operating costs for the day. On these cards is also an expense item representing the sum of all other garage expenses, incidentals, etc.; everything in fact is on these cards except depreciation and interest.

A five weeks' report card is made out on each vehicle, with such information as the following: Date, condition of vehicle,



Novel Arrangement of Loading Platform, Used by Ward Bread Company In Connection With One Hundred Electric Delivery Vehicles

battery number, miles per day, power cost, accident cost, repair cost, total cost, route number, and any additional remarks.

The last record card is a renewal of parts sheet, bearing date put in service and the dates on which tires, bearings, batteries, and other wearing parts were replaced.

### The Costs

The following costs cover the entire operating expense, except interest and depreciation on the entire fleet of 100 vehicles. The period covered was from January 29 to March 2, and as far as weather conditions are concerned was not favorable.

#### Summary of Five Weeks' Records of All Cars

Total mileage .....	66,023
Average mileage per car per day .....	22
Total power cost .....	\$ 597.63
Power cost per car per day .....	.199
Total accident expense .....	84.65
Accident expense per car per day .....	.018
Total repair, garage and maintenance .....	2,400.50
Average per car per day .....	.80
Total cost 100 cars, 30 days (exclusive of interest and depreciation) .....	3,082.78
Cost per car per day .....	1.03

The efficiency of the service was determined by dividing the total number of car days operated by the maximum possible car days, giving 98.83 per cent. efficiency as a result.

The Office of the Public Printer, Washington, D. C., is now using six electric trucks, two each of 1,000, 2,000 and 5,000 lbs. capacity, which have replaced sixteen horses and are doing the work in a satisfactory manner.



## Hauling Brick With Commercial Cars Most Satisfactory

The Schneider Brick Company, whose yards are at Springwells, about five miles from the center of Detroit, Mich., is using a three-ton, double friction drive commercial car to haul brick, and so well has it worked out that the owners expect to install another shortly.

Speaking of the service, Joseph Schneider, a member of the firm, stated to a representative of the COMMERCIAL CAR JOURNAL, "Yes, I am satisfied with the outfit, it is doing our work all right. I figure on getting a new one this spring."

Although the Schnedier car, which is shown in the illustration herewith, and nine miles from home at that, is a three-ton vehicle, the owners state that they never hesitate to add a little more if it saves an extra trip at the end of the day.

The car will average from five to eight trips a day and usually carried 7400 lbs. of brick, and when, in a pinch more brick is needed, why the load is increased to 2000 brick, which, weighing  $4\frac{1}{2}$  lbs. each, makes a load of 9000 lbs., or 3000 lbs. more than it is supposed to carry. In other words, on occasions the overload runs as high as 50 per cent. As a regular thing the overload is 23 per cent., or nearly a quarter.

The car averages nine miles an hour, and the longest trip it ever made was to Grosse Point. The owners, when asked why they bought the truck, stated that it was an experiment. They state that it has proven very successful on the long hauls.



The Schneider Brick Truck. Nine Miles From Home With 7400 lbs. of Brick. Note the soft condition of the road. Though this car is rated at three tons the owners do not hesitate to add a little more if it saves another trip at the end of the day. The car has done wonderfully good work, they state.



Just an idea of the sort of roads the truck has passed over. On this occasion the road of clay formation was in very bad shape, but the car got through it very nicely and drew up to the side, as shown.

The service of the Schneider Brick Company is tabulated below and is based on figures given out by them.

Truck purchased last September;	
Capacity, 3 tons;	
Load carried 7400 to 9000 lbs.;	
Percentage of overload, 23 to 50 per cent.;	
Miles traveled in 6 months .....	6067
Running time—hours .....	626
Average per hour—miles .....	9.7
Miles per month .....	1011.17
Miles per day .....	39
Cost of fuel (gas and oil)—per day .....	\$1.15
Longest run—miles .....	38
Ratio of efficiency on long hauls as compared with horse team of similar capacity .....	3 to 1
Cost of horse up-keep per day .....	\$1.25
Cost of horse if laid up per day .....	\$4.00
Cost of truck if laid up .....	\$0.00

Speaking of depreciation and probable life of truck, the owners state they had not got that far. The truck does the work and does it well. For example, it can take three round trips to Grosse Point while the horses are making one, therefore it is three times as effective on a long haul as the horses.



Speaking of horses, Joseph Schneider stated that he bought a new horse for \$240 and in 26 days it was dead, another purchase at the same price died in nine months. A year ago last summer \$2000 worth of horses died from heat or other causes. He figures that if a horse is laid up it costs him \$4 a day, but if the truck is idle it costs nothing.

A nephew of the owner drives the car and cares for it. Speaking of the run to Grosse Point, a round trip of at least 20 miles, it takes the horse outfit 12 hours to make the run; it takes the car 8 hours to make three trips. The horse team leaves at 6 A. M., and does not get back until after 5 at night. The truck leaves at 6.30 A. M., and is all through with the trips at 3.30 in the afternoon.

"I am satisfied," says Joseph Schneider, "I think every brick maker ought to have two or three trucks and to do away with horses. Our truck has worked out first rate, it takes the place of three teams, that is, three wagons and six horses."

### GOOD SERVICE DERIVED BY WHOLESALE DRUGGISTS

"We are very well satisfied with the cars, which are operated at a little more expense than horses," is the statement of the Michigan Drug Company, Detroit, Mich., with reference to the three commercial cars in use. Service is considered very good by Head Shipper Anger, who has charge of the cars. This concern is one of the largest of the sort in the Middle West and the three cars are kept busy at all times. The list comprises a half-ton two-cylinder Van Dyke, two one-ton two-cylinder cars of Rapid and Grabowsky make.

The half-ton Van Dyke is used within the two-mile circle, so called, that is, within a radius of two miles of the base. This vehicle averages twenty-five to thirty miles a day.

The two one-ton cars are used further out in the city and care for the suburban orders and in the course of a day average about fifty miles of travel. It is estimated by Head Shipper Anger that the cars are operated at about three dollars a day, covering gasoline, oil and tires.

The firm has been using cars for two years, and also has a large horse service; though this work is done under contract by outside parties.

### Do Own Repair Work

It has been found a more economical and satisfactory proposition to do all repair work on the company's premises and not pass the cars over to outside repairmen. This knowledge of affairs has come about after observance of the drivers. The cars are kept in the company's own garage and are looked after by a good mechanic who is capable of making the necessary repairs; and since the change has been inaugurated a saving is said to have been effected. If any one of the drivers breaks down on the road he calls up headquarters, and the repairman gets there in good season and rights matters. The drivers do not make the repairs.

Speaking of the drivers, it was stated that the company had had its troubles with the inefficient sort. Head Shipper Anger stated that he would much prefer to take a green man who had a head on his shoulders and could think, than employ one of the sort

claiming to be a mechanic; for invariably the fellow who was not the mechanic would get along much better. If he had trouble on the road he would notify the office, and the mechanics, or those claimed to be did the same thing; so that the superior knowledge which they claimed to possess amounted to nought in this case.

One driver, after requiring nine and a half hours to make a trip he formerly did in four and a half hours, was released. Investigation of his case revealed a unique system of killing time.

No special system is in vogue for keeping track of the cars, though it is known just what is spent on the service. The three cars take the place of four teams and the work is constantly increasing.

### MUST KEEP UP WITH THE PROCESSION

A well known Eastern user of commercial cars when asked recently by a representative of the COMMERCIAL CAR JOURNAL as to the sort of service derived stated that it was "good." He has been using cars for many years and there are few points about the business that he has not learned from experience.

"We simply could not do without cars to make our deliveries," he said. "There are many reasons why we cannot. It is a plain proposition if your competitor next door, engaged in the same line of business uses commercial vehicles to make his deliveries and does it quicker than you can with horses, you must join the procession. I was among the very first in this city to realize the worth of the motor truck."

Another feature of the commercial car use is that the if the equipment is good deliveries are made in better time a horse outfit that will approach it. You know, there is a and the public demand quick delivery now. It is a case of keeping up with the procession. A wide awake house cannot do without commercial cars any more than a complete stock system. We notice the difference when we lay up a car for a day or two for an overhauling. The horse service alone is not equal to the demand of our business. Troubles, what sort do we have? Well, drivers have caused us a lot of annoyance but we now have several good boys who know the cars and are careful.

We made a mistake by trying to get speed out of a car fitted with solid tires. This did not apply so much to the electrics which were slower in speed anyway.

But on the gas cars the solid equipment caused a lot of mischief not so much because the cars were faulty in design as that the drivers were prone to speed, and that desire to drive fast piled up the repair bills. Somehow or other speed lot of difference between a 15-mile clip and actually covering 15 miles in an hour in city traffic. But the whole situation in a nutshell in so far as our business is concerned is that we must have cars and good ones, always ready for work and kept is associated with a commercial car but to my mind it should not be. When I say speed I mean 25 or 30 miles an hour. There is really no necessity for that. If a light car travels at 15 miles an hour it will cover a lot of territory and show me fellow with the best equipment can hold the business. That may sound strange to some, but it is a fact. It is obvious that in the best of condition."



People like to deal with up-to-date houses.  
Yes!  
But how can you tell them?  
That's easy: Do they use commercial cars or horses?





### VELIE SCHEDULES OF OPERATING COSTS

The Velie Motor Vehicle Company of Moline, Ill., has issued a schedule of two and three-ton truck operating estimates and also estimated cost of horse drawn vehicles. The figures used are actual operating expenses of users of two and three-ton trucks for better than one year.

Special attention is called to the liberal allowance for depreciation; the trucks being charged off at the end of seven years. A liberal mileage rate per day is allowed which, of course, would be in favor of the trucks if not operated the given number of miles. Pneumatic tires on demountable rims are used and liberal allowance is made for the fact that the tire guarantee is not as liberal as on solids.

#### Estimate of Cost of Operating Velie Three-Ton Truck

Cost, \$3500 with body—6% interest per annum equals...	\$210.00
Fire insurance, floater type .....	96.25
Garage, \$20 per month equals per annum .....	240.00
Driver, 50 weeks, \$20 per week .....	1000.00
Liability and collision insurance per annum .....	125.00

Making a total fixed expense per annum .....	\$1071.25
or a total rate would equal \$5.35 per day as a fixed expense.	
Yearly depreciation from original cost .....	\$500.00
Painting per annum .....	75.00
Repairs, replacements and overhaul .....	300.00

Total per annum .....	875.00
Forty-five miles per day, three hundred thirteen days per year, equals 14,085 miles per annum at \$875.00 cost would equal per mile .....	.062
One set of tires, 8000 miles, \$438.11 equals per mile .....	.054
Gasoline at 10c per gallon, 5 miles to the gallon .....	.02
Oil 200 miles, 1 gal. 40c equals per mile .....	.002
Grease 1000 miles, 60c per gallon per mile .....	.0006
Transmission oil, 60c per gallon per mile .....	.0006

Cost per mile, 45 miles per day, 313 days per year .....	.1392
Fixed expense per day, \$5.35 .....	
Cost to operate, 45 miles per day, at .1392 per mile .....	
Total cost to operate would be .....	\$ 6.26
Total cost to operate 45 miles per day .....	\$11.61
If the three-ton truck is operated but forty miles per day for 313 days per year, or total of 12,520 miles, the cost per mile .....	.069
Plus the tire, oil and gasoline cost per mile is .....	.1462
Forty miles per day at .1462 per mile equals 5.848 per day, plus fixed expense \$5.35 to operate 40 miles equals \$11.108	

#### Estimate of Cost of Operating Velie Two-Ton Truck

Cost, \$3000 with body—6% interest per annum equals...	\$ 180.00
Fire floater risk .....	82.50
Garage, \$20 per month per annum .....	240.00
Liability and collision insurance per annum .....	125.00
Driver, 50 weeks, \$20 per week .....	1000.00

Making a total fixed expense .....	\$1627.50
Operating expense per day, is 313 days per annum, \$5.19 .....	
Estimated repairs, upkeep and overhaul per annum .....	\$260.00
Repainting .....	75.00
Depreciation, charge truck off in seven years per annum .....	428.57

Estimated cost for operating per annum .....	\$763.57
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Tires, 3 pneumatic on front wheels, 6000 miles, \$192.30 equals per mile .....	.032
Four solid tires estimated 8000 miles, cost per mile .....	.0198
Oil, 200 miles, 40c per gallon per mile .....	.002
Grease, 1000 miles, 60c per gallon per mile .....	.0006
Transmission oil, 1000 miles, 60c per gallon per mile .....	.0006
Gasoline, 10c per gallon, 5 miles to gallon per mile .....	.02
50 miles per day, 313 days per annum, 15,650 miles per annum, equals per mile .....	.048

Making total operating cost per mile .....	.123
To operate 50 miles per day at .123 per mile equals .....	\$6.15
Plus fixed expense per day, \$5.19 equals to operate 2-ton Velie truck .....	11.34
Cost per mile to operate 60 miles per day, same basis of cost per mile equals .....	.115
Cost per mile to operate 60 miles per day at .115 per mile cost \$6.90 plus fixed expense per day \$5.19, cost to operate Velie 2-ton truck 60 miles per day, equals .....	12.09

#### Estimate of Cost of Operating Horse-Drawn Vehicles and Schedule of First Costs for Such Taken on a Basis of an Average Horse of 1400 lb. Weight

Team Cost .....	\$ 550.00
Truck cost of 3 to 4 ton capacity .....	350.00
Harness .....	100.00
Blankets .....	12.00
Incidental costs for such a team .....	15.00

Team Investment .....	\$1027.00
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We believe from the best information we are able to receive that the life of an average team in a city, such as Chicago, where the pavements are hard, and this must be taken into consideration, is five years. The life of a larry, or wagon is eight years; the life of harness is four years. We have endeavored to compute figures for cost of operation on this basis for weekly and daily expense. The average driver receives \$15 per week. We might state that many people carry an extra third horse to every ten as an investment for depreciation.

Cost per horse per week:

Feed, per horse .....	\$3.00
Veterinary and medicine .....	.08
Shoeing, setting and new shoes .....	.70
Horse depreciation .....	.86
Horse loss, one to 20 every four years .....	.07
Harness repairs .....	.12
New Harness .....	.15
Storage or housing .....	1.25
Barn wage, which includes hauling of refuse, etc. .....	.45
Grease for wagon, harness oil, etc. .....	.12
Bedding .....	.10
Insurance and Liability protection .....	.24
Nets, blankets and barn blankets .....	.10
Wagon repair .....	.12
Repainting wagons .....	.12
Wagon depreciation, 10 years .....	.34
Interest on investment per horse at 6% .....	.59

Total weekly cost per horse upkeep .....	\$8.41
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On two horses, this same basis, the estimates would be twice as much .....	\$16.82
Driver, \$15 per week, cost per week for team .....	31.82
Cost per day, seven days .....	4.54

The average for teaming 304 working days to the year. A truck can be operated successfully to replace a given number of teams, and we estimate  $2\frac{1}{2}$  teams. The expense of operating  $2\frac{1}{2}$  teams per day, at \$4.54 per day, would be  $2\frac{1}{2}$  times \$4.54 or per day, \$11.35. The average team can travel 14 miles per day.  $2\frac{1}{2}$  times this would be 35 miles per day. The cost of operating the 3-ton Velie truck, estimated \$11.61 per day. Cost of operating horse-drawn  $2\frac{1}{2}$  teams, per day, estimate \$11.35. A difference of 26c would be the cost of truck over  $2\frac{1}{2}$  teams. One must consider under all conditions the cost of loading  $2\frac{1}{2}$  teams compared to cost of one truck. Road and weather conditions must be taken into consideration, and the benefit from an advertising standpoint must also be considered.

### SIDE DISTRIBUTION SIMPLIFIES DELIVERY

In order to make commercial cars worth while, most users find it necessary to keep them on the move all the time during the working day. Though some may not realize it, considerable time is lost in loading and unloading. Body design has much to do with this. For instance, if a truck can be loaded only from the end it means a great number of unnecessary steps for the loaders. If, on the other hand, the car



Large Commercial Car Used in City to Deliver Bottled Beer in Cases. Note the side distributing arrangement

can be loaded from the side, time is saved. The accompanying illustration is that of a large commercial car delivering cased goods in the city district. Note that here the driver has the load of active cases concentrated at the center ready for the next stop. The cases are so distributed that the driver may easily get from one end of the car to the other. Side distribution would doubtless improve many services. To say the least the driver saves time by having the load where he can easily and quickly get it.

### COAL COMPANY USES THREE TRUCKS

That the smaller coal companies, that is, concerns in the smaller cities, are taking to commercial car delivery is evident from the equipment now seen on the streets. A case in point is that of W. C. Mason & Company, of Hartford, Conn. This concern is using a three-ton Pope-Hartford, three-ton Packard and a five-ton Pierce-Arrow truck. Although the company states that it is not yet in a position to know definitely the whole story regarding the performance of these cars, it follows that they are pretty well satisfied as an order has just been placed for five more three-ton Pope-Hartford gasoline trucks. This will make seven three-ton cars and one five-ton truck in service, which is the largest showing in the city of Hartford.

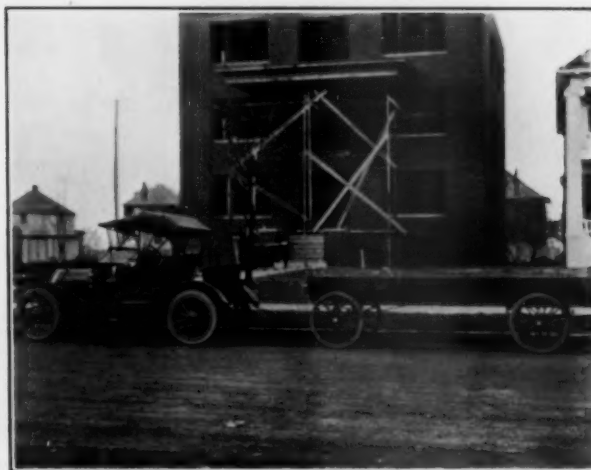
The owners state that they have not used the cars long enough to know definitely what they will do other than that they reduce the horse equipment and are faster on the road and are used to advantage on the long hauls.

As to definite cost, no statement is made. It is now possible to make deliveries four or five miles from the city, which takes in the suburban sections. With horses these outside trips would consume considerable time. Thus far the service is said to be very satisfactory.

The illustration herewith shows the five-ton Pierce car about three miles from the yards, located on the banks of the Connecticut River. The cars are loaded from overhead shutes. Much of the coal is delivered in bags which is a prevailing method in the east, especially where there is a carry from the car to the cellar window.

### HOW A CONTRACTOR SOLVED THE PROBLEM

Contractors at times have much need for teaming facilities, and those who rely upon others to do the teaming often find themselves at a disadvantage, especially during the rush. This was the situation as it confronted A. B. Beebe, a Detroit builder. There were times when he needed materials badly and could get no one to do the hauling for him, so he made use of his pleasure car, doubly useful by attaching a trailer. Now he can haul a ton and a half of building material of whatsoever nature at a good fast clip. According to his own statement, he recently made a trip in an hour that he could not have made in half a day with horses. The tractor is a 35 h.p. four-cylinder Wayne runabout. The trailer is fitted with four electric pleasure car wheels and the axles are solid.



Pleasure Car and Trailer Arrangement; used by A. B. Beebe, a Detroit contractor, in lieu of a truck

The front wheels steer as do those of an ordinary car, being connected through a tubular cross connection. An iron bar is used to hook on to the end of the pleasure car. The frame of the trailer is wood and the box is 14 ft. long and 3 ft. 6 in. wide. The owner says that it will hold a ton and a half. Sometimes the load carried is stone, again it is wood building material, or it may be the sections of a portable house. At any rate the owner is well pleased with the idea, and as he uses his runabout for business, anyway, feels that he is getting double service at single cost. He states that the pleasure car pulls along just as if there was nothing behind; and, not only that, but he can haul material when he needs it. "How did you ever come to build that trailer?" he was asked. "Because of the lack of cartage facilities when I needed them; now I can haul stuff when I want it and where I want it without waiting for someone else to do it."





## A Long Experience In Delivery Van Working

### Fifty-six Light Motor Trucks Replace About 450 Horses

BY OUR FOREIGN CORRESPONDENT

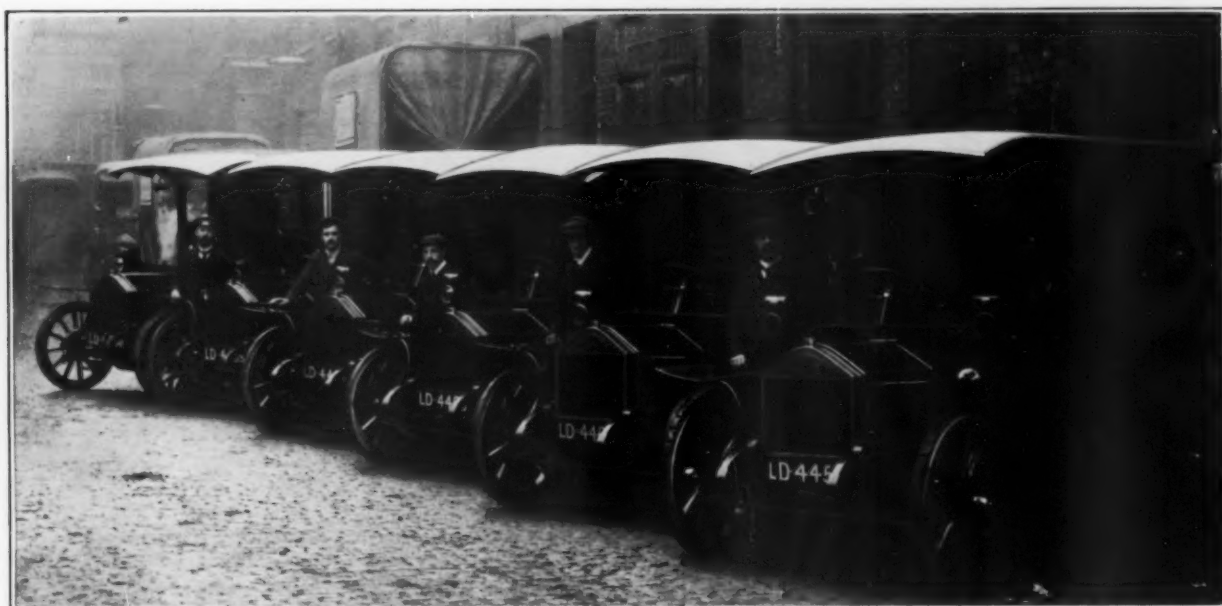
**P**ROBABLY no large firm in this or any other country has a larger experience in the use of light delivery vans than have Messrs. Schoolbred, of Tottenham Court Road, London. It is now more than six years since the writer first met Mr. Leicester Barwell, a director of the firm, who looks after the transport department, and who is himself a keen motorist. In those days Schoolbreds only hired their vans, and as a result of six weeks' very satisfactory working, they were about to embark on ownership.

One point that I remember Mr. Barwell made on that occasion emphasizes the comparative elasticity of the motor van, and since then his view has been more than justified. Mr. Barwell's point was, that delivery of goods to one place often led to a request for delivery from a place some mile or two further on, and so forth. Thus the service got extended step by step, and while in this respect a horse showed very strongly defined limits, the motor van had very wide possibilities.

Again the motor starting from London at eight o'clock in the morning could be in Maidenhead or Taplow say in two or three hours, and so deliver goods like fruit, etc., in a much fresher condition and in time for lunch if need be.

To give an idea of how the delivery business of some of our big firms over here is altering, let me give a few facts about Messrs. Schoolbred. Before they started motor vans they had 300 horses; now they have 120. Each automobile does the work of at least six horses, and a good deal of the work would, in fact, be quite impossible for horses, owing to the length of the rounds, for there are some rounds that are too long for, say, a one day round by horse, yet not long enough for two.

Since the firm adopted the use of motor vans they have more than doubled their road mileage, and yet the places of the 180 horses discarded have been taken by only 56 motor vans. In fact, to do the work of these 56 vans would, on the firm's showing now necessitate well over 400 horses. And yet, although the mileage has been doubled in six years, the



Fleet of Lacre Commercial Cars Used by Schoolbred in England. The commercial car is particularly effective during a rush



Schoolbred's Fleet of Lacres During a Rush Period—being loaded for quick delivery

total expense for delivery only reached \$2,000 a year more than at the beginning of that period—\$2,000 for work equivalent to that of 450 horses per year, to make no mention of the additional men that the use of these horses would involve.

### Working Costs

I am indebted to Mr. Barwell for sending me the figures of working costs, which have been obtained as an average of their experience. It should be pointed out that no interest has been charged on capital, neither has rent of garage, since the shed accommodation is the firm's own property, and they do not have to pay rent. In comparison with horses, however, the one balances the other, for if the interest on the automobile is more, the rent is certainly less, since a motor van takes so much less room than a horse van and the horses to give an equivalent amount of work.

Assuming the first cost at about \$2,300, it will be seen that the depreciation on a compound basis just about reduces the cars to scrap price within the 8 years life allowed.

Under the heading of repairs, engineers' and mechanics' salaries are charged, for the firms have done the whole of their repairs for the last 4½ years, and as only third party insurance is charged, this item also includes the costs of accidental damage. This item of repairs taken in conjunction with tires, is obtained from the average workings for the 6 years as given herewith.

#### Average for 48 Vans (First Year).

Repairs .....	\$146.74
Tires .....	177.86
\$324.60 per van.	

#### Average for 41 Vans (Second Year).

Repairs .....	\$278.54
Tires .....	232.30
\$510.84 per van.	

#### Average for 31 Vans (Third Year).

Repairs .....	\$242.32
Tires .....	219.24
\$461.56 per van.	

#### Average for 20 Vans (Fourth Year).

Repairs .....	\$271.82
Tires .....	258.88
\$530.70 per van.	

#### Average for 6 Vans (Fifth Year).

Repairs .....	\$246.36
Tires .....	271.06
\$517.42 per van.	

This gives 146 yearly working averages of van workings, giving an average of

Repairs .....	\$225.30
Tires .....	216.86
\$442.16 per van.	

Despite the high tire costs in the early days, Mr. Barwell, to be on the safe side, ignores the cost of the first year as being too low to take an average, and this gives:

Repairs .....	\$263.74
Tires .....	235.94
\$499.69 per van or say \$500 a year for tires and repairs.	
Depreciation (8 years) .....	\$250
Insurance (third party only) .....	27
Repairs .....	265
Tires .....	235
Motor spirit (1,645 gallons at 7d) .....	240
Driver (average wages 31s) .....	403
Oils, grease, carbide, etc. ....	35
Washing .....	30

\$1485

Say \$1500 for 18,000 miles, or 8.3 cents per mile.

### Mileages and Costs—Horse and Motor

The mileage has always been obtained from recording instruments, which show an average of 63 miles a day, though some vans do much more than this. In fact, on some few rounds the mileage runs into 25,000 miles a year, the daily distance on the longest round averaging 120.

With horses the country rounds averaged 45 miles a day, and each round occupied 4 horses, two resting, 2 working. Allowing 18 days annually for repairs to van and absence of horses through illness and death, such a round would total about 13,000 miles a year, and at the lowest would cost \$1,750 to work, which means a cost of 13.5 cents to the mile. Both in the case of the horse and the automobile porters' wages have been omitted.

### The Motor Truck and Extension of Delivery Areas.

Beside extending all their existing country rounds, Messrs. Shoolbred, by using twelve additional vans, have added twenty districts to their delivery area. Eight of these vans do one district every other day, and another district every other three days, while four vans do a district daily.

These twelve vans, employing twelve drivers at \$7.50 a week, and twelve porters at \$6.50 a week, involve an additional cost of \$8,700 a year. Twelve additional horsed vans with the necessary teams of four horses would, including the wages of porters, have cost \$25,000 additional a year, and then have averaged only about half the work of the less costly working automobiles, while on emergency the cars can do about three times the work of the horses.

All this big motor delivery business sprang from the smallest of beginnings. The firm started by using a motor for delivering a van load of goods, whenever the load was large enough, to a certain house some 30 miles away from London, down in Surrey. Later they arranged for a monthly service to this single house, then the people in other houses gradually got to know of this, until the service became fortnightly, weekly, and finally every other day.

Many of the other services, as for instance those to Bal-dock, Hitchin and Letchworth, out to the north of London, similarly started as monthly services and also now deliver three days a week.

In conclusion it may be added that since Mr. Barwell was naturally interested in the originally existing large stock of horses, he has certainly not been over favorable to the automobile truck; in fact, he himself states that he has very carefully avoided taking too roseate a view of its possibilities.

### EUROPEAN CITIES TO HAVE MOTOR FIRE APPARATUS

Among the towns that are wanting to purchase motor fire engines are Croydon and Derby in England, Dantzic in Germany, while the Fire Brigade Committee at Bradford in England is likely to do a good deal to increase the number of fire engines in the future, by its report just issued. The motor fire engine has attended 151 fires in the year, and its speed in getting to a fire, and the rapidity with which the first aid apparatus can be got to work on arrival, have been most marked. This car has already led to the acquiring of a motor fire escape, and now the Bradford authorities have placed an order with Dennis Brothers for a 55 h. p. four-cylinder Dennis-Gwynne turbine fire pump, similar to that already described and illustrated in *THE COMMERCIAL CAR JOURNAL*.

### LAST HORSE-DRAWN 'BUS IN LONDON

At the end of October the last horse omnibus in London made its last journey, and a paragraph in the "Daily Chronicle" in London, reminds one of the early days when the omnibus was first introduced into the British capital by George Shillibeer, who gave the name of "omnibus" to the vehicles. The word at the time raised much opposition, and much discussion as to the proper plural, and Joseph Hume raised a laugh in the House of Commons by mentioning omnibi.

Most people, in fact, preferred to call them shillibeers, after their introducer, but as that gentleman shortly after failed as a 'bus proprietor and became a prosperous undertaker, people felt a certain delicacy about continuing the name.

### A NEW MOTOR SPRINKLING CAR

Autocar Company Makes Novel Vehicle for City of Pensacola

An innovation in motor vehicles, just turned out by the Autocar Company, of Ardmore, Pa., is a sprinkling car for the city of Pensacola, Fla.

A large cylindrical water tank is mounted on a regular Autocar commercial chassis, with complete sprinkler equip-

ment. The capacity of the tank is 300 gals. and the car is calculated to do the work of several horse-drawn sprinkling carts at a great saving of time and labor.

One great advantage of the motor sprinkler is the fact that it does not puddle the roads the way ordinary slow-moving sprinkling carts do. It wets the ground evenly and yet thoroughly by reason of its ability to traverse the route several times while horses are doing it once.

The amount of water per rod is easily regulated by the driver, by means of levers.

Motor sprinkler systems are comparatively new in this country, but have been used extensively for years in Germany, France and other European countries.



New Motor Sprinkler Manufactured by the Autocar Company, Ardmore, Pa., for use in Pensacola, Florida

### COMMERCIAL CAR IN THE ARMY

The reliability of the motor truck for service in the United States Army has been forcibly demonstrated in the efficiency test which is now being held under the direction of Capt. Alexander Elliott Williams, U. S. A. Captain Williams has had three motor trucks on the road since February 8, and from reports he made recently while staying in Louisville, Ky., the motor vehicles are more satisfactory than the Army wagons. He said that his experience with the three motor trucks on his present trip has convinced him that they will prove to be more economical in transporting Army supplies than wagons.



## Gasoline Engine Starters for Commercial Cars

### A Review of the Automatic Engine-Starting Devices Applicable to Commercial Cars—(Continued)

#### NORTHEAST ELECTRIC STARTING AND LIGHTING SYSTEM

The Northeast Electric Company, Rochester, N. Y., is manufacturing an electric starting and lighting system, which comprises a motor generator, starting switch and a battery, together with suitable gearing. This system is a most practical device for both commercial and pleasure cars, and is entirely automatic in its operation.



**Motor Generator of The Northeast Electric Starting and Lighting System Attached to Standard Engine**

This system, which comprises a motor generator, starting switch, lock switch and battery, enables the driver to positively rotate the engine and start it by simply operating a starting switch located in the most convenient place.

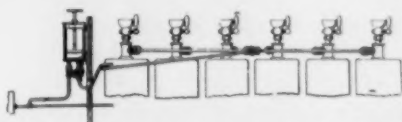
To start, the driver turns the ignition current on and sets the spark and gas levers to a position, as when starting with the crank, moving the starting switch by foot allows current from the storage battery to operate the motor generator, turning the engine until it starts. When released the starting switch automatically returns to normal position, and the motor generator supplies current for lighting and charging the battery.

#### REAGAN PRIMER AND STARTER

The Reagan Grate Bar Company, 209 N. Front Street, Philadelphia, is putting out the Reagan Ideal priming device and engine starter.

The priming device consists of a small pump to be fastened to the dash, taking gasoline from the feed pipe and forcing it through the distributor to the motor cylinders through a tee inserted between cylinder and priming cup.

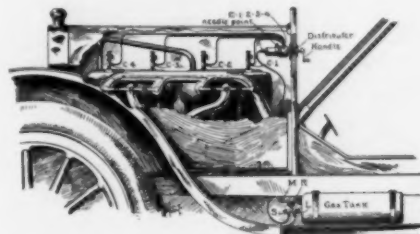
The device sells for \$26 for a four-cylinder motor, and \$32 for a six-cylinder motor.



**Reagan Primer and Starter Attached to Six-Cylinder Motor**

#### THE DISCO ACETYLENE-GAS ENGINE STARTER

The device is manufactured by the Ignition Starter Company, 724 Ford Building, Detroit, Mich. The system consists in charging the cylinders with an acetylene mixture which is ignited with an electric spark, starting the motor. A small pump is located on the dash, and in starting, turning the handle one complete revolution puts a charge of gas into each of the cylinders, which, when ignited, gives a perfect



**The Disco Acetylene-Gas Engine Starter**

C 1, 2, 3 and 4 are pipes leading to openings E 1, 2, 3 and 4 in distributor; K is connector from distributor to gas tank to the two-way valve S on the gas tank; M is the main valve.

explosion in each cylinder and ten or twelve complete revolutions of the motor, which should be sufficient under normal conditions to start any engine. Under extreme conditions, however, such as a cold day, the operation may be repeated or the engine can be run continuously under acetylene gas until it warms up and runs under its own gas. The distributor handle shown in illustration, is the only exposed part of the device. The priming cups are removed from the cylinders and couplings are inserted for gas pipes leading to the gas distributor, from which another pipe leads to the gas tank.

#### THE GARDNER SPRING ENGINE STARTER

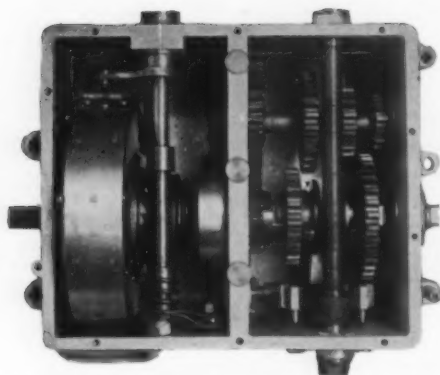
The Gardner engine starter, made by the Gardner Engine Starter Company, Inc., 1451 Michigan Avenue, Chicago, Ill., is also of the spring variety. This is located between the engine and the transmission. In the illustration it is shown located within the transmission case.

It is purely mechanical and is a gearless control of stored energy secured from the momentum of the car through the rear axle and drive shaft.

On the drive shaft is mounted a brake drum which contains a compound spring. The brake band is actuated by the ordinary engine clutch pedal. This construction also provides the car with a powerful transmission and clutch brake.

This starter is preferably located between the engine and the transmission, as shown in the cuts. A small pedal is used for releasing the spring.

The spring is used in a rather novel manner, being wound and unwound in the same direction, which dispenses with gears and idlers as no reverse motion occurs. It is at all times under



The Gardner Starter Installed Within the Transmission Case

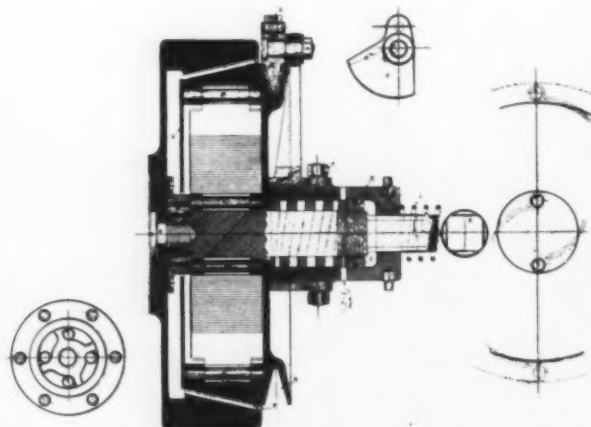
high tension and only one-quarter of the full wind is used. This method admits of a long spring within a small compass.

The action of this device is positive and whirls the engine rapidly (an important item in cold weather), the number of revolutions being determined by the length of the spring.

It is not designed for cars already built, as it is preferably enclosed in the transmission case, but it is also furnished in an enclosed case, which can be attached to unit power plants, etc. It is operated from the seat by a foot pedal and spins the motor a dozen rapid whirls, weighs less than 50 lbs. and costs less than \$30.

### COMBINED ENGINE STARTER AND ELASTIC CLUTCH

The Regan Clutch Company, Incorporated, San Antonio, Tex., is presenting to the public a decided novelty in a self-starting device, and elastic clutch. It consists of a cone clutch with two 12 gage coiled springs, 3 in. wide and 25 ft. long, attached to an arbor on the shaft around which they are wound with the distal ends attached to the inner margin of the clutch. These springs are so strong, having a pulling capacity of more than 30 tons, that when released after being wound, they revolve the engine from five to ten times, and invariably start it if it is in condition.



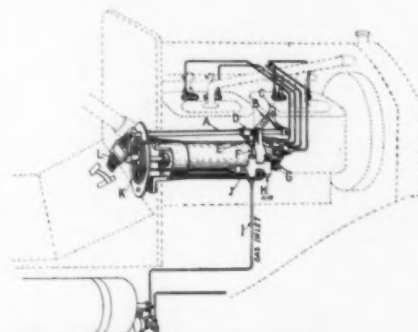
Elastic Clutch and Engine Starter

Illustration showing the attachment of the two coil springs to an arbor on the shaft, around which they are wound with the distal ends attached to the inner margin of the clutch. Also ratchet to release springs.

After being released by the ratchet clutch by a foot lever when the car moves off, the springs gradually rewind and are always ready for the next cranking. In the re-winding process the car can never make a sudden start, but must move off smoothly.

### THE "AA" ACETYLENE-GAS ENGINE STARTER

The new starting device put out by the Auto Appliance Manufacturing Company, of Akron, O., and known as the "AA Self Starter," has a number of new and novel features. While it is an internal combustion starting device it is not like other devices now on the market, as it introduces by means of a brass tubing, pump barrel  $2\frac{3}{4} \times 6$  in., having a pedal attachment, a firing charge of gas and air instead of pure gas into each cylinder. This is done by a revolving disc having one port hole which revolves in the head of the pump, which has the same number of port holes as the motor it is applied to, has cylinders. It will be seen by reference to the illustration that when the piston is drawn backward, which is done automatically by a spring, a measured amount of gas is drawn through inlet pipe I, past the regulating needle valve, where it is mixed with the air which enters



The "AA" Acetylene-Gas Engine Starter

This system operates by introducing a firing charge of gas and air instead of pure gas into each cylinder and is operated by a pedal

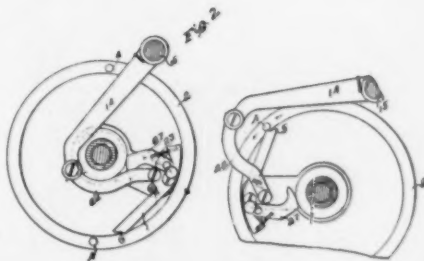
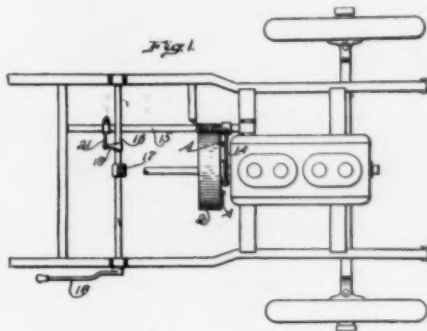
through ball check "H." Needle valve "F," through the action of lever "E," turns gas off and on by the movement of slide rod "A," operated in conjunction with pedal "L." The same movement of slide rod "A," through arm "C," and pet cock lever "B," opens and closes communication from pump to the cylinders through action of revolving disc before mentioned. For use in extremely cold weather needle valve K is provided, which can be opened after the motor has been charged, introducing a sufficient charge of pure acetylene gas into the intake manifold through connection "J," and when mixed with the air that passes through the intake manifold, produces a firing mixture that will run the motor until enough gas has been brought up from the carburetor, when it can be closed.

To operate push pedal "L" forward, which unlatches it, same movement turns on gas and allows it to escape into the mixing valve. Push forward as many times as there are cylinders and on the last stroke of the pedal latch it and press button on switch. The pump barrels are made in three sizes for 30, 45 and 60 h. p. motors.

## WILKINSON FOOT-LEVER ENGINE STARTER

The Wilkinson Motor Starter Company, Inc., successor of Brown & Murray Company, 1251 Woodward Avenue, Detroit, Mich., is putting out a foot lever engine starter that entirely does away with the hand crank, and all danger from back-firing, enabling the operator to start the motor from the seat with very little effort.

It is a very simple mechanism, positive in its action, and substitutes a pedal for turning over the motor in place of the hand crank.



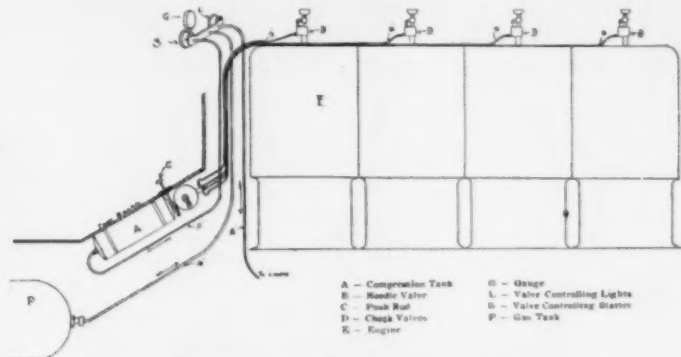
Wilkinson Engine Starter

Sitting in the seat of the car, the operator, by pressing forward foot lever 17 (Fig. 1) or hand lever 18, turns shaft 16, actuating members 19 and 21, giving motion to shaft 15, which lifts arm 14 in front of flywheel. This engages link 22 (Fig. 2), it being connected with driving members 1, by crank pin 23, thus causing oscillating arm 27 to swing forward and force a thrusting contact by shoulder 5 against stud 4, which is inserted into the rim of the flywheel 2, thereby actually rotating the engine crankshaft fully 180 degrees, compressing one cylinder and passing its ignition point each time the foot lever is fully depressed. If for any cause the motor should back-fire, eccentric pawl 27 immediately moves shoulder 5 inward away from the path of stud 4, allowing the engine to retroact without injury to machine or operator.

The device consists of a pedal connected by links to a bell crank arm, the end of which when the pedal is depressed, engages studs projecting from the face of the fly wheel near its rim. As the pedal is depressed to its limit it throws the engine over, the action being so strong that without much effort the ordinary motor can be rotated over several compressions with one throw of the lever. This, of course, starts it, and if not it can be repeated again. The lever does not slip off the pins when starting, as the pressure tends to hold it on, but this pressure is not enough to keep it there against a back kick.

## AMERICAN ACETYLENE ENGINE STARTER

The American Starter and Carburetor Manufacturing Company, 2022 South 40th Avenue, Chicago, Ill., are makers of the American Self-Starter. This is a device using acetylene gas from the regulation tank, introducing the gas into the cylinders through the priming cups or spark plugs. From the illustration it will be seen that with this apparatus an auxiliary compression tank is placed under the foot board. The gas is led from the regular tank "P" to the controller on the dash, from which it is led by one pipe to the auxiliary tank and by another pipe to the lights, a valve controlling the flow to each pipe. To start the engine, turn on valve



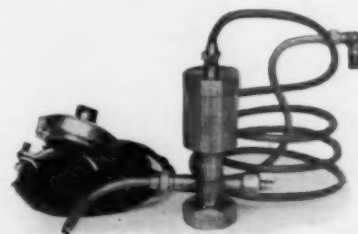
The American Acetylene Engine Starter

A, compression tank; B, needle valve; C, push rod; D, check valves; G, gage; L, light valve; S, starter valve; P, gas tanks

"S" to auxiliary tank until pressure on gage "G" indicates 30 lbs., then push rod "C" with foot which allows gas to go through needle valve "B" to the pipes leading to cylinders, then turn on the spark and the engine starts. The check valves "D" through which the pipes are introduced into the cylinders insure perfect compression in the cylinders. The engine can be started with a pressure of only 5 lbs. by putting in several charges.

## INVEX ACETYLENE ENGINE STARTER

The Webb-Veitch Company, Inc., of 1777 Broadway, New York, has recently placed on the market an acetylene gas engine starter of novel design. The apparatus is unique in the fact that the weight complete is only 2 lbs., and also in the fact that there are very few parts, as will be noticed by the cut which we show herewith. The principal part of this engine starter consists of an electric valve enclosed in a small cylindrical case. This valve is attached directly to the acetylene gas tank, and the pressure regulation is the same as that



Invex Engine Starter; which permits gas to flow from the gas tank to the intake manifold by means of a magnetic valve located on the steering wheel



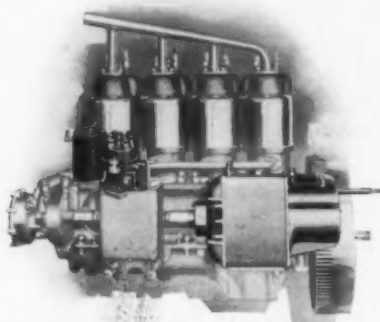
used to regulate the pressure for the gas headlights, so that no other regulation is required.

The operation of this engine starter is substantially as follows: The electric push button, which is attached to the steering wheel, grounds the magneto and causes a current to pass through the magnetic valve, allowing a charge of acetylene gas to pass into the intake pipe, and this charge is drawn into the cylinders, and is not exploded for the reason that the ignition is cut off, as stated before. This leaves the engine with a charge of gas in each cylinder. Before starting the engine the button of the steering wheel is pressed again to allow some additional gas to get into the intake manifold pipe. The regular ignition switch is then thrown on, and the spark advance lever rocked in the usual way as when starting on spark.

The price of this apparatus is \$18 complete, and the whole thing is so simple that it can be applied by anyone who can run a car.

### THE DELCO ELECTRIC GAS ENGINE STARTER

This equipment is made by the Dayton Engineering Laboratories Company, of Dayton, O., and consists essentially of two units, namely a motor generator and a storage battery. Accessories are added, such as a cut-out device, controlling switches and a regulator. Besides starting the motor, the system also lights the car.



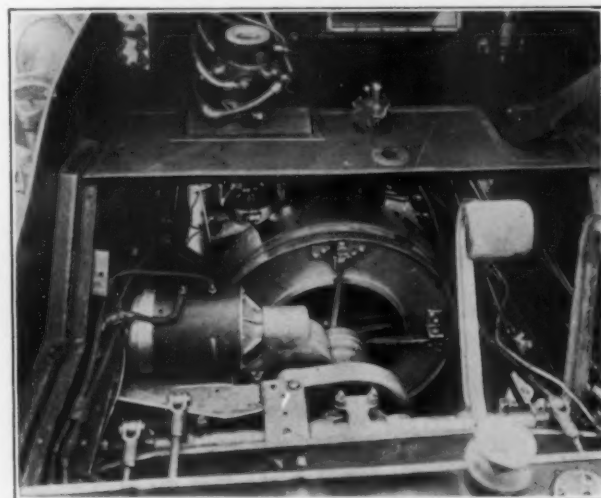
**Delco Starter and Lighting System**

The Delco Starting and Lighting System, illustrated, consists essentially of two units; namely, a motor generator and a storage battery. The motor generator is so attached to the engine that it can be connected to the flywheel by a system of reducing gears and run by current from the storage battery when it is desired to start. This turns the engine over until it takes up its regular action, when the motor is disconnected from the flywheel and driven by the magneto shaft as a generator, recharging the storage battery.

To start the driver simply retards the spark and pushes forward on the pedal. This automatically engages a gear of the electric motor with gear teeth in the fly wheel of the engine, causing the latter to turn over. As soon as the motor starts under its own power, the operator releases the pressure on the clutch pedal, the electric motor is disengaged from the fly wheel and is driven as a generator from a magneto shaft. Tests have shown that the battery has sufficient capacity to turn over the motor continuously for twenty minutes. But of course this is not required in practice.

### HARTFORD ELECTRIC ENGINE STARTER

The Hartford engine starter is made by the Hartford Suspension Company, of Jersey City, N. J. This engine starter, unlike most other electric starters, is operated in connection with a six volt storage battery, which is the standard size battery for automobile lighting. The system comprises a small but very efficient one-third h. p. motor which weighs about 20 lbs. The amount of current which it consumes in starting the car is about 200 Watts. The motor is designed to run at a very high speed (7000 r. p. m.). The gearing consists of a worm and worm wheel and a spur gear and piston giving a gear ratio of 100 to 1. A small fly wheel about 2¼ lbs. in weight, is mounted at the end of the motor shaft and when the motor revolves at high speed this fly wheel momentum adds



The Hartford Electric Starter Installed; showing the motor and gearing. By merely pushing a button the engine starts without further effort on the driver's part. This is said to be the lightest electric engine starter on the market.

to the power and saves battery current. The gears are always in mesh. In the large gear there is a positive roller clutch which engages while starting and automatically disengages when the motor starts and then rotates on a roller bearing. The worm gear is not keyed to the shaft but is held in place by a friction device which in case of a premature explosion disseminates the force. The back kick is dissipated without undue strain to the parts of the starter.

The whole outfit consists of a switch, making possible the lighting of various combination of lights, a magnetic cut-out which automatically connects and disconnects the generator from the battery, the generator charging battery when speed is over 8 m. p. h. and being cut off below that rate of speed. The motor for the starter is series wound and all parts accurately machined. The armature shaft is mounted on ball bearings and the armature itself is constructed of laminated Russian iron. The commutator has wide surface space. The generator is of the permanent magnet type and is also ball bearing mounted. The battery floats on the line.

(To be continued)

## INFORMATION BUREAU

### FREE SERVICE

Surely there is something special which nearly every one of our readers would like to know about commercial cars, or their use or care.

Our Information Bureau is ready to reply to all inquiries.

Just write us stating fully what you want to know.

Address

Information Bureau,

COMMERCIAL CAR JOURNAL,

MARKET AND 49TH STS., PHILADELPHIA, PA.

### MOTOR TRUCK GROWTH IN NEW YORK CITY

(213) We would like very much to know what the growth of the number of automobile trucks used in New York City has been. In other words, I want a statement of the number of auto trucks used in New York City each year for several years.

I should also like to know, if you have such figures on file, how many horse-drawn trucks there are in New York City which will eventually be replaced by motor trucks.

ADVERTISING AGENCY.

No accurate statistical tables have been compiled since 1909, but it is accurately and fairly estimated that there are in New York City, about 4000 motor vehicles of all types, and at the close of the year 1910, about 2700, at the end of 1909, about 1900.

It is estimated by a competent motor truck authority, at least 50,000 horses could be replaced in New York City by motor trucks during the year 1912, if the buying public were more conversant with the many advantages to be derived through such substitution. Within five years there is no reason why New York City should not become an almost universal horseless town.—Editor.

### MILLING COMPANY WANTS TRUCK

(215) We have contemplated the purchase of an automobile to take care of our city trade, about a 3-ton truck. Our hauls are about three miles long and the roads or pavements in Grand Rapids are fairly well improved.

We would like to have an expression from you stating, under these conditions, which truck would be the most economical, gasoline, gas-electric or electric; also, we would like to know how the Edison Battery has been acting.

MILLING COMPANY.

From the very brief description of the conditions affecting your transportation, we are not quite in a position to advise you as to the exact type of truck to use in your business. There are factors such as insurance, number of stops, distances between stops, character of drivers and other help, total number of miles traveled per day, garaging facilities, charging stations, etc., which have a bearing upon the subject. You must also consider the character of the load carried and how it is packed, whether or not the gasoline fumes would affect it in any way.

There are many gas trucks hauling flour without any bad effects, but we have had a few instances brought to our attention where the flour has absorbed the odor of the exhaust, though the concern complaining had recently added three more gas trucks to its equipment. Without more definite details, we would say that either gasoline or straight electric trucks would well answer your purpose and would advise you to take up the subject with the various manufacturers of the 3 or 5-ton type, the most responsible of which will be found in our advertising directory.

The Edison battery is giving excellent results and from recent reports bears out the manufacturers' claims. We know of many installations which have been in use for a long term of years and are still giving excellent service.—Editor.

### MOTOR TRUCKS DO MOUNTAIN WORK

Speedwell Motor Car Company, Dayton, O., have sold six one-ton Speedwell trucks to the Great Western Power Company, of Keddie, Cal. These trucks are to be used over a mountain trail to carry materials and supplies for the building of an immense dam, costing \$18,000,000, at Big Meadows, Cal. The first truck was put in commission about May 1st. R. H. Kroninger, of the Speedwell Company, made the initial trip on the first truck load, and notwithstanding the fact that the roads were very heavy, due to recent rains, and they expected some difficulties, due to the many narrow turns and heavy grades, the truck negotiated the entire distance without any trouble at all with its full load of 13,000 lbs.

The trip was 25 miles each way, or 50 miles for the round trip, and the truck made the trip, including time of loading and unloading, in ten hours. Heretofore a team of horses required three days to make the round trip. The six trucks which the Speedwell Company will supply will displace about 138 horses. The trucks will travel on a regular schedule, and will furnish a freight service for the entire route, in addition to the hauling for the big dam. A road repair gang has been placed on the road to put it in better condition, and better time is expected when their labors are completed.

ANNOUNCEMENT has been made that the United States Army is preparing to make a demonstration of trucks for the purpose of learning the possible value of motor propelled vehicles in warfare. Universal and Federal trucks have been selected for the demonstration, which includes a run from Washington, D. C., to La Crosse, Wis.

ALCO-PITTSBURG SALES COMPANY has been awarded the contract to furnish the city of Pittsburg with three automobile trucks for hauling asphalt for street maintenance. These trucks are of 6½ tons capacity.

Special articles on the use of commercial cars in connection with the express and transfer business will be published in addition to the regular departments of the next issue in the CCJ.

## A Résumé of Brakes and Sprags Used on Commercial Cars

By C. T. SCHAEFER, Member Society of Automobile Engineers

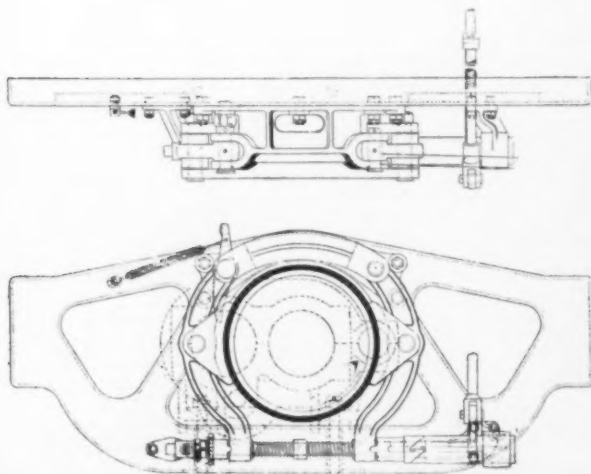


HERE seems to be little uniformity as regards the location and type of brake, except that one pair is invariably placed in the rear wheels, while the other pair is placed on the jack shaft. These brakes are divided into two classes, the service and the emergency brake.

### Five Locations, Three Types

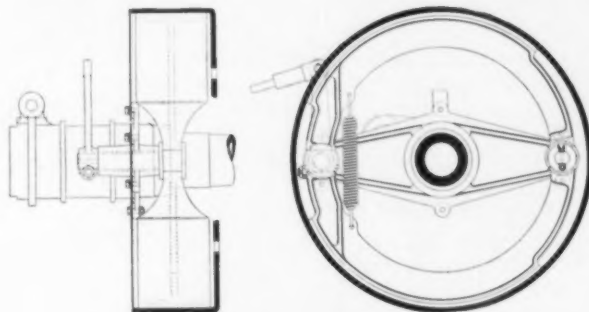
The most common location for the service brake seems to be on the jack shaft. In some cases they are mounted outside of the frame and between the frame and sprockets, the Packard, Locomobile and Knox trucks being examples of this type. In either cases they are placed outside of the sprockets as in the Stearns, Lozier and United States trucks.

There are also some cases in which they are placed inside of the frame as in the Alco, Grabowsky and Morgan trucks. While in the Natco and Mogul the service brakes are located in the rear wheels and on the Garford truck at the front end of the transmission counter shaft. The above applies to chain driven vehicles, while in the shaft driven, this brake is either placed in the rear of the transmission, or on the propeller shaft in front of the differential housing or in the rear wheels. The Pierce truck depicts the type having the service brake mounted at the rear of the transmission, while in the Mais it is located on the propeller shaft in front of the differential housing. Locating the service brake in the rear wheels is most common on the delivery wagons of the touring car type, although the shaft driven three-ton Smith truck is equip-



### Shoe Type of the Service Brake Used on the Pierce Truck

In this type two cast-iron shoes are brought to bear against the cast-steel brake drum. These shoes are hinged to arms on each of the drums, these arms in turn are hinged to a bracket which is attached to the bottom of the cross member, these top ends pivoting on the operating shaft. Springs are placed on the operating shaft between these two arms to keep the brake released. Mounted on the operating shaft is a ratchet, which is prevented from turning by a tongue fitting into a groove in one arm. The brake lever has an integral ratchet, which meshes with the ratchet mounted on the operating shaft, forming a means of applying the brake. A nut is placed at the other end of the operating shaft, forming the brake adjustment.



### Pierce Emergency Brake

This is placed in the rear wheels, being of the integral expanding type, cam-operated. To adjust this brake the clevis in the operating rod is detached from the lever and the lock nut loosened, the clevis being screwed further on the rod, according to the amount of adjustment required.

ped with double rear wheel brakes. The emergency brakes are generally placed in the rear wheels with either type of drive.

### Brake Types

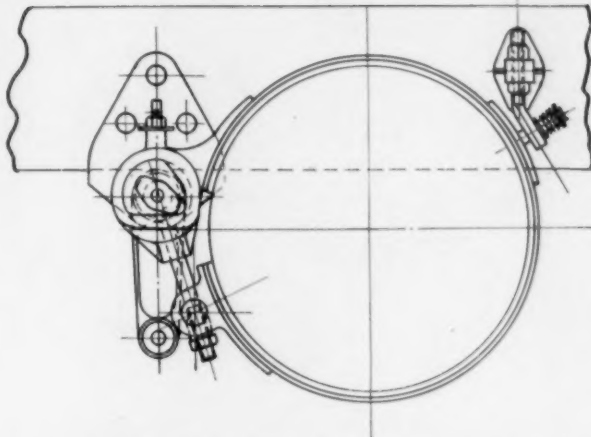
A great many of these brakes are of the shoe type as on the Alco, Peirce, Packard and Garford, while other makers prefer the external contracting type, the Grabowsky, United States and Morgan trucks being examples of this type. Other



### Gramm Ratchet Sprag

Rear view of the Gramm three-ton truck, showing the ratchet sprag arrangement combined with the brake drum. The ratchet sprag has a pawl held out of engagement by a spring until the operator desires to use it.





**Cam-Actuated Service Brake Used on the Dayton Trucks**

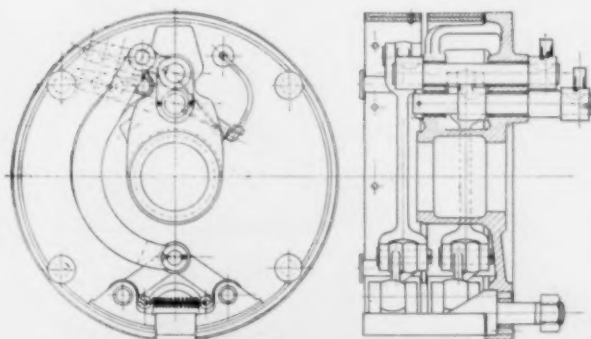
The brake is mounted on the jack shaft outside of the sprockets, is of the external contracting type, the operating lever being carried on the inside of the frame. The adjustment is through the rod carrying the lower end of the brake.

makers prefer the internal expanding type of brake especially if it is located outside of the frame. For examples of this type the Lozier and Stearns trucks may be referred to.

From the above it will be noted that no less than five locations and three types of service brakes are mentioned for chain driven vehicles, while for the shaft driven there are three locations and three types of brakes, while each of these types of brakes can again be divided into several classes according to their construction. It will also be noted that the location and type of brakes seems to have no special combination, that is, all types of brakes will be found in any of the locations mentioned.

### Sprags

To guard against running back on a hill should the motor stall and the brakes fail to work, a sprag has been made standard equipment on a number of trucks. There are two types or sprags, the ratchet sprag and the lever sprag. The



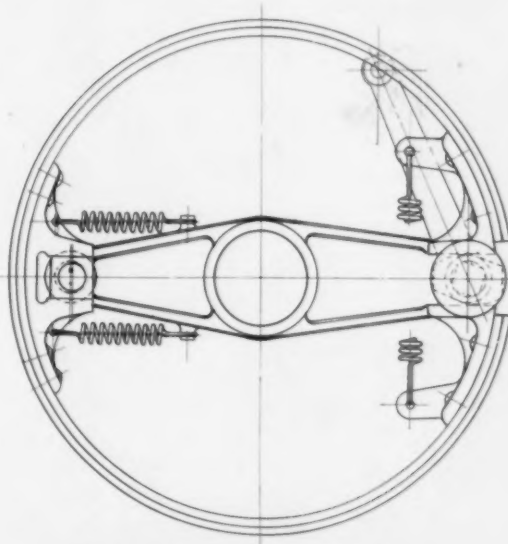
**Service and Emergency Brakes Used on the Four and Six-Ton Mogul Trucks**

Both brakes are of internal expanding type and placed in the rear wheels. They are what is termed single expanding shoes, the shoes being carried on four pins extending from the circular bracket which carries the operating shaft, levers, linkage, and forms the dust cover. The brake shoes are operated through the two small links attached to them and the long link attached to the operating shaft. Adjustment is through the brake linkage, as in the Pierce emergency brake, and a series of holes in the operating levers, for slightly changing the brake leverage. A stud projects at one end for attaching them to the radius rod and thereby preventing rotation.

ratchet sprags are generally combined with the brake drum, while the lever sprags are fitted to the frame or axle.

The former type is found on the Peirce and Gramm trucks, while the latter is found on the Locomobile and the Saurer trucks. The Locomobile has two sprags, both linked to the rear axle, while the Saurer has but one sprag, linked to the center of the rear axle.

These sprags are so constructed that they can readily be released by the driver from the seat. In the Locomobile they are released by pulling a chain, the end of which is on the driver's seat. An extra chain is attached to each sprag, which prevents it from being jumped due to its going into the ground at or too near a vertical position. When the danger of back sliding is past the driver must dismount and hang them up again. The ratchet sprag has a pawl held out of engagement by a spring until the operator desires to use it. It is



**Timken Emergency Brake Equipment**

This is of the internal hinged shoe type, being cam-actuated. The operating shaft passes through the radius rod, while an arm is provided, which extends back to the other end and forms the hinged end through a steel block and pin. This arm has a boss on one end through which is passed a set screw and lock nut, forming an adjustment. This set screw bears against the hinge bracket and brings the shoe nearer contact with the brake drum.

adapted to engage with a ratchet either secured to or formed integral with the brake drum. Should the motor stall and the brakes fail to work in ascending a hill, the sprag will prevent the car from running backward more than a few inches.

### Brake Adjustments

Brake adjustments, although quite common, are in some cases almost hidden, while in others they are very readily reached. This adjustment is either incorporated in the brake linkage or the brake band.

Brake equalizers are quite common on trucks, the well-known wippletree types being widely used at present. In some cases these are made from flat bar stock, while in others they are channels pressed from steel sheet. They may be suspended either inside of the frame, on top or at the bottom. In some cases these equalizers are very short, as in the Peirce and those so commonly found on touring cars.

Some makers show a preference for the steel cable over the rod, especially in designs in which the rods are very long, as they are very apt to crystallize. Long rods should not be used unless provided with pivoting brackets to absorb the vibrations. In the Smith truck this point is overcome through the use of long channel connections which are pressed from steel sheet.

### Air Brakes

Another brake worthy of mention is the Saurer service brake, being a compressed air brake worked by the throttle lever. For a quarter of a circle this lever works the throttle,



**Pierce-Arrow Ratchet Type of Sprag**

This is formed integral with the brake drum. The pawl is attached to the lower link and held erect, out of engagement, by a coil spring.

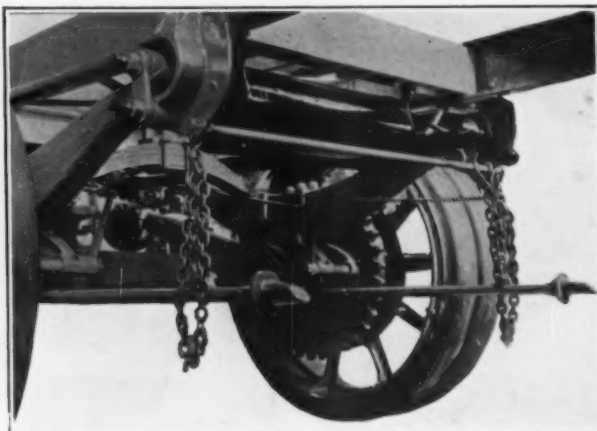
but beyond this closed position causes the motor to operate on the two cycle principle, compressing air in the cylinders to an extent which enables the car to be controlled on a 20 per cent grade without the need of a brake.

Most all service brakes at the present time are fabric faced, this fabric being made up of asbestos and other materials interwoven with copper wire. The best of these fabrics will stand considerable abuse and will wear fairly well under ordinary conditions of service.

### Brake Construction

In the shoe type of brake, the shoes are generally made of a good cast iron, with a high percentage of manganese, they being satisfactory and readily replaced.

The majority of the emergency brakes are also fabric lined, while some are made of hard phosphor bronze. What has been said about cast iron also applies to the phosphor bronze. When these materials are used diagonal grooves are generally found to prevent chattering and squeaking.



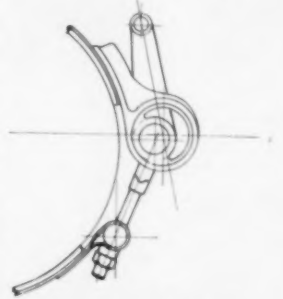
**Locomobile Sprag Arrangement**

Rear view of Locomobile; showing two sprags, which are linked to the rear axle. These are of the lever type and are released by pulling a chain operated from the driver's seat. Extra chains are fitted to each sprag, which prevent them from being jumped, due to going into the ground at or too near a vertical position.

### Faults in Design

The service brakes are usually well protected owing to their position; however, a considerable amount of dirt and grease gathers on their surface. This is usually thrown off the chains. There are quite a few trucks in which the rear wheel brakes are unprotected. This protection could easily be provided through the use of a sheet metal dust guard.

The operating rods, levers, etc., are in some cases neglected. Special effort should be made to make all adjustments so that they are readily accessible. Pins should be hardened and have surfaces large enough not to wear too rapidly. Levers should be fastened to their shafts very tightly, as well as strongly. Long operating rods should be avoided as much as possible, or either provide a pivotal bracket to protect them from vibration. Pedals should be arranged to give enough throw, so as to enable the truck operator to apply the brake easily and not too harshly, while the pedal rods should be adjustable to suit the requirements of the operator.

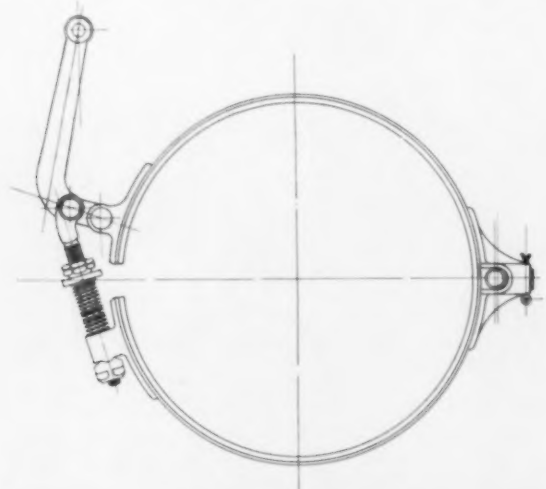


**Service Brake Used on Old Reliable Trucks**

This, instead of being cam-actuated, is operated through an eccentric. An adjustment similar to the Dayton is used.

The advantage of placing the service brake on the jack shaft, is that a reduction is obtained through the sprockets, making the brakes more powerful.

The reason advanced by manufacturers employing double rear wheel brakes is that it is desirable to get the braking force as near to the point where the momentum of the vehicle is checked as possible. In a sense this argument is true, especially for the heavier braking, for the fewer elements there are between the tire and brake, the fewer are subjected to heavy stresses and the fewer chances of failure



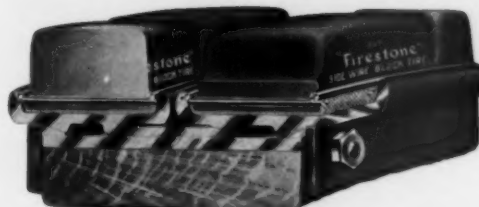
**Service Brake Used on the Two-Ton Timken Equipment**

This is furnished to quite a number of truck makers. It is of the external contracting band type and is pivoted from the radius rod at the front end and provided with an adjustment at the rear, which is also attached to the radius rod. This adjustment is similar to that provided on the Dayton and Old Reliable trucks, through lock nuts on the clevis-rod end connecting the lower end of the band with the operating lever.

## Two of the Six Fully-Proven "Firestone" Truck Tires



**Hard Base—Channel Type**  
Furnished in Single or Dual Form



**Side-Wire Block**  
Dual Form for Rear Wheels

Ten years' experience as leaders in motor truck tires is back of Firestone Truck Tires and Rims. Ten years of progress, step by step, has perfected them. Firestone, and not Firestone customers have paid for the experimental stage in all Firestone Tires and Rims.

We have a fully-proven tire for every Car, Load and Condition of Service. On regular rims or on Quick Removable rims for quick tire-changing *right on the spot*.

### **Hard Base—Channel Type**

For resiliency in heavy service. This tire is vulcanized firmly into a channel with saw-tooth base. Consists of an extremely tough tread, cured to a hard rubber base.

The up-turned sides of the channel ensure the firmest possible base support against the tire working or tearing loose. Flat bands expand when in service, loosening the rim and tire; but the Firestone channel is too rigid to expand. At the same time it protects the rubber from side abrasion and allows it to wear down as long as there is enough left to give resiliency.

### **Side-Wire Block Tire**

For traction, non-skidding and resiliency in heavy service. Has a continuous base, preventing abrasion from metal plates, as in other tires of this type. Worn or damaged blocks may be removed and new ones substituted without impairing the tire's strength.

Like the Hard Base—Channel type, it has all the advantages of Firestone quality of rubber.

### **Quick Removable Rim**

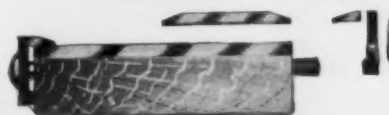
Over two years in successful use. The original and *only perfected* one of its kind. Does away with vital weaknesses now in others. Accomplishes *in practice* just what we say *on paper*: "Enables the driver to make a quick tire-change right on the spot. Does away with lay-ups for tire-changes."

Write for full information and guarantees.

**The Firestone Tire & Rubber Co., Akron, Ohio.**

*"America's largest exclusive tire and rim makers"*

**More Than 100 Service Stations for Truck Tires.**





## Commercial Car Expenses Small

In a Paper Read Before the New England Retail Coal Dealers' Association, William P. Kennedy Gave an Account of the Cost of Maintenance of Several Commercial Cars of Different Capacities, Which We Append His Paper Is Herewith Printed in Part



IN attempting to supersede horse equipment in the transportation of coal with motor trucks the vital question is whether the conditions of operation can be so modified as to permit of applying the machine to such an amount of its capacity as will reduce the present cost with horses. In other words, there is no question but that, if conditions are arranged so that the machine can be permitted to operate for a sufficient period of the working day, it will readily effect a saving.

"There are at present many impediments to such machine employment, due largely to delays incident to making the delivery as well as the delays quite frequently experienced in loading at the coal yard. Unloading conditions present the greatest difficulties because they are usually beyond the control of the operators, but the yard conditions being absolutely in the hands of the coal operators, there should be no reason why the loading of coal cannot be accomplished with very short delay to the machine.

"Another impediment is the fact that the transportation of coal is a seasonable performance and the long months of inactivity, as well as the difference in volume of business between the midwinter conditions and the seasons of lesser activity at the beginning and end of this season, make it somewhat difficult to decide upon an equipment which will be large enough to take care of the maximum conditions and yet will not involve too much investment for the average or normal conditions, and further, the possibility of selecting an equipment of such character as to permit of its use in other lines of service when not required for coal transportation.

"That the difficulties referred to with regard to loading operations can be changed to provide for quick loading by mechanical means is quite apparent from the number of coal yards which are equipped with hoppers, and other mechanical devices which provide for quick loading of the coal, but where such equipments are not in existence the coal dealer has not only the consideration of purchasing an expensive equipment of automobiles, but frequently in addition an expensive modification of his yard facilities.

"It goes without saying that the ideal way to load motor trucks would be automatically from the hopper system, the machine passing under the hopper and taking its load in a very few minutes and immediately starting upon the delivery. If this hopper equipment is not in existence the most inexpensive solution of the matter of lessening the delay in loading would be to employ extra bodies, which might be loaded in the absence of the machine and which could be quickly mounted or demounted by the power equipment of the machine itself. This plan might avoid the necessity of any serious change in yard equipment and the cost of loading by hand would not be a serious consideration when contrasted with the investment necessary for mechanical loading. Several plans have been already employed by which separate or spare bodies are utilized

in this manner, the body in some cases being hoisted vertically off the truck and held in a suspended position while being loaded until replaced on the machine again for delivery.

"In making deliveries of coal such a variety of conditions are encountered as to make it often difficult to determine whether the automobile body should be stationary with end or side inclined chutes, whether it should be a body capable of being lifted vertically, or whether it should be tilted at one end or possibly tilted and the body dumped to the ground as is occasionally necessary in handling soft coals.

"All these types of body equipments on machines are in use, as well as the scheme of handling a large quantity of coal on the semi-trailer equipment, which has the advantage of transporting the greatest portion of the weight over ordinary large diameter wheels with steel tires, but the final determination as to what class of body will be selected must be determined by the particular operating conditions for which the machine is intended.

"It is certain that larger loads of coal can be transported by machines than by horses, and in very much less time, but sometimes the delivery conditions of the operator prevent him from utilizing the larger sizes of machines in view of the fact that his deliveries are to be made in smaller quantities. Such a case as this is coped with by the employment of a large machine with several compartments in the body so that any one of two or three portions of the load may be discharged without interfering with the balance.

"The problem, therefore, is not whether coal can be transported more cheaply by machines than horses, but whether the existing conditions in any particular case will permit of the employment of the machine to anything like its economic capacity. Sometimes these conditions are unchangeable, and again slight modifications or changes only are necessary in bringing about new conditions which permit the machine's utility to be taken advantage of.

"In many cities coal has to be delivered in the most inaccessible places; sometimes to very small manholes at the edge of the sidewalk, sometimes through openings which are located at the building rather than at the edge of the sidewalk, and in other instances into openings which are in the walls of the building above the sidewalk. It seldom happens, except in industrial institutions, that the coal can be directly unloaded below the place on which the machine stands. Wherever these conditions can be changed so that an inclined inlet or chute can be provided from the machine to the coal pile the quick discharge of the coal from the machine can be accomplished, but this is frequently impossible, and in some cases a form of chain bucket conveyor has been fitted to the machine so that the load may be transferred in this manner to points which are otherwise inaccessible.

"In the matter of securing from coal operators reliable information on the cost of transportation with horse equipment there appears to be considerable difficulty, due principally

to the variety of bookkeeping methods, wherever they exist, and the lack of any uniformity in cost per ton or other unit delivered is due to consideration which must be given to the complete inactivity of the equipment during a portion of the year and the variance of activity from one end of the busy season to the other.

"The whole problem requires segregation of those charges which are constant whether the vehicle is employed or not and an additional charge for those items affected by activity added to the first or fixed charge so as to arrive at a true cost of unit performance, whether this latter be based on a tonnage rating or on a ton mile basis.

"It is quite possible in determining the operating cost of machines to follow a similar practice of separating the inactive or constant charges from the active charges and the total charge per day thus arrived at should be used in the determination of the cost of delivery per ton or per ton mile.

"To exemplify this the attached table may serve to show the charges influenced by service or inactivity. The items marked 'variable,' however, are dependent upon each operator's particular condition, and to cover charges for garaging and for operators we have assumed a figure of \$60 per month for garage and \$20 per week for labor. This table with the total figures shown is intended to cover a year's operation and a performance of 50 miles per day per vehicle.

"In this table it will be observed that on each size truck there is a figure for fixed charges, which includes interest at 6 per cent. and a depreciation of 10 per cent. on those parts of the vehicle which are not subject to wear and which are replaced or renewed under the heading of maintenance. Under the maintenance charge there is a figure for the up-keep of mechanical wearing parts and another for tires, and in the operation division there are figures covering consumption of gasoline and lubricating oil, operators and other incidentals to the cost of service.

"Assume that we are to determine the cost of operation of a five-ton truck which is employed the entire year. The items for fixed charges, garaging and operators are constant and independent of the tonnage or mileage performance of the vehicle. This charge against the vehicle while inactive will amount to \$7.56 per day, assuming 312 working days to the year, and the total of the maintenance items, together with the items for fuel and lubrication, can be resolved into a cost of \$.11 per mile since this example is intended to cover a 50-mile performance each day for 312 days.

"Now, with the inactive charge of \$7.56 per day and the charge of \$.11 per mile, by multiplying the latter by the mileage performance of the truck on any particular day and adding it to the inactive charge of \$7.56 per day we get the total cost for transporting the day's tonnage and in this manner arrive at the actual cost per ton.

"Assume that the truck covers 33 miles and delivers 31 tons. Thirty-three multiplied by 11 cents per mile equals \$3.63, the active charge, and this added to \$7.56, the inactive charge, makes the total cost of the day's performance \$11.19, and since this day's performance is the delivery of 31 tons, we divide this figure by 31 and find that the cost per ton is 36 cents. In a similar manner any other performance can be calculated.

"In the event of the machine being used only half of the year the fixed charge of \$7.56 would be reduced by 50 per cent. of the annual charge for operator and a reduction of the garaging charge during six months to say \$5.00 per month, thus making the fixed charge for the days the machine is rendering

service \$4.93 instead of \$7.56, and consequently reducing the cost per ton in the particular case cited to 27 cents instead of 36 cents.

"If for comparison against such machine cost we have a definitely known cost of transportation per ton with horses, it is quite possible to determine the performance limits of the mileage and tonnage which the machine must accomplish to equal or better the horse cost."

### Annual General Average Operating Cost

Machine Size	2-Ton	3½-Ton	5-Ton	6½-Ton
<b>Fixed Charges</b>				
Interest on investment at 6 per cent. and depreciation on non-wearing parts at 10 per cent. ....	\$376.00	\$458.00	\$600.00	\$709.00
<b>Maintenance</b>				
Wearing parts .....	346.00	420.00	487.00	495.00
Tires .....	358.00	519.00	757.00	886.00
<b>Garaging</b>				
Storage and washing (variable) }	(Assumed)			
Garage labor (variable) }	(Assumed)			
Insurance (variable) }	720.00	720.00	720.00	720.00
<b>Operation</b>				
Gasoline at 10 cts. per gal.	250.00	300.00	375.00	500.00
Lubricating oil at 35 cents per gal. ....	39.00	75.00	105.00	119.00
Operator (variable) }	(Assumed)			
Helper (variable) }	1,040.00	1,040.00	1,040.00	1,040.00
Licenses (variable) }	(Assumed)			
	\$3,129.00	\$3,532.00	\$4,084.00	\$4,469.00

Based on performance of 50 miles per day per truck, 312 working days per year.

Total fixed charges, garaging and operator, 5-ton truck .....	\$2,360.00
Total fixed charges, garaging and operator, 5-ton truck, per day .....	7.56
Total charges for maintenance, gasoline and oil, 5-ton truck .....	1,724.00
Total charges for maintenance, gasoline and oil, 5-ton truck, per day .....	5.525
Total charges for maintenance, gasoline and oil, 5-ton truck, per mile .....	.11



### Made Trip Between Texas and Detroit

This \$450 Brush Runabout covered the distance of eleven hundred miles, carrying F. H. Buchmann, traveling salesman, who has arrived in New York after making a round trip between Texas and Detroit. This use of a pleasure car for commercial travelers is somewhat new, and will probably increase largely in the near future.

# PHILADELPHIA THIN PLA



Are you carrying now, in your electric car, dead battery weight which will only become available for power next year?

Each pound of storage battery should represent a certain amount of available power.

One pound of "thick plate" battery will furnish 8 to 9 watt hours.

One pound of PHILADELPHIA thin plate battery will furnish 14 to 15 watt hours.

The mileage of a car is proportional to the watt hour capacity of the storage battery.

That explains why you should have a PHILADELPHIA thin plate battery.

*Send for booklet on*

## PHILADELPHIA STO



ONTARIO  
PHILADEL  
DE

Philadelphia,

New York,

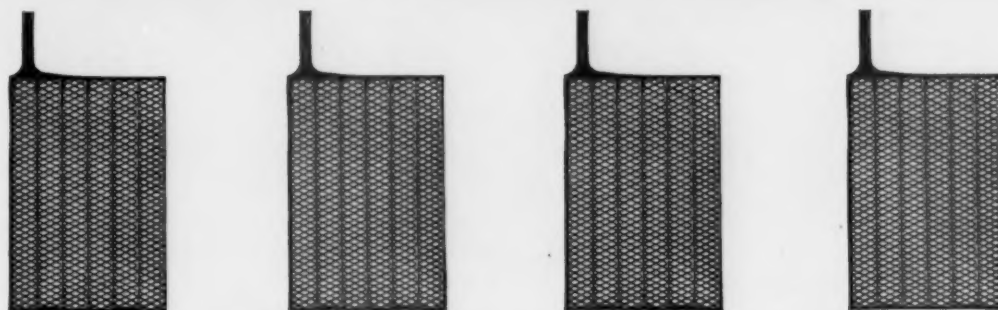
Chicago,

St. Louis,



# TE STORAGE BATTERIES

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Is your "electric" out of commission due to necessity of cleaning the battery, or due to plates buckling or short circuiting?

PHILADELPHIA thin plate batteries are assembled in high jars which obviate the necessity of cleaning.

PHILADELPHIA plates are pasted on "DIAMOND GRIDS" which resist buckling, owing to their sturdy structure.

DIAMOND GRIDS are double, the diagonal members on either side securely lock in the active material, resulting in long battery life.

That explains why PHILADELPHIA batteries are practically foolproof and keep the "electric" going all the time.

*thin plate batteries.*

---

## RAGE BATTERY CO.

AND C STS.

PHIA, PA.

POTS



Boston,

Rochester,

Detroit.

## Drilling Holes and Setting Posts With Motor Truck

Digs Post Hole and Sets Up Largest Pole in Eighteen Minutes  
Truck Motor Supplies Power to Specially Devised  
But Simple Machinery

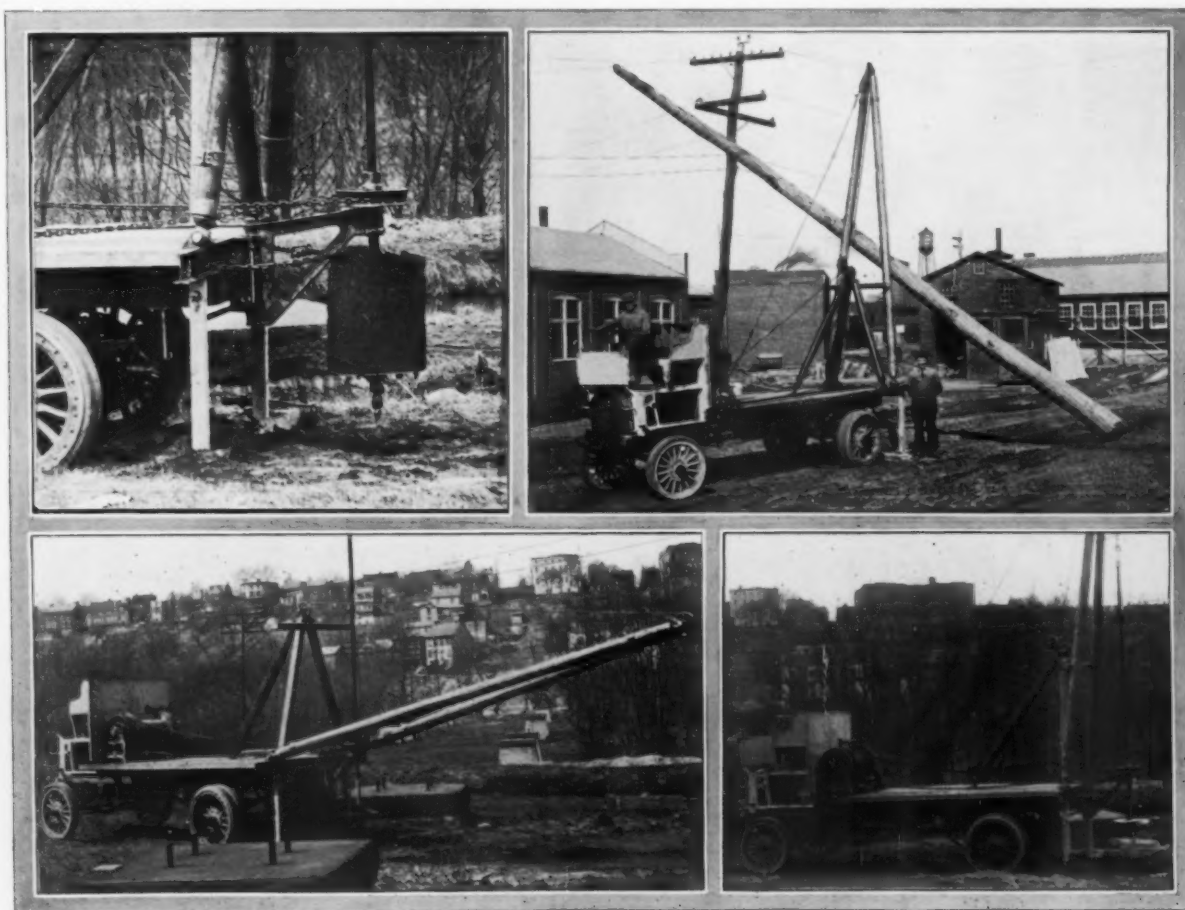


ONE of the most interesting applications of the motor truck just being called to the attention of the industry is the use of a truck in connection with digging out post holes and setting the posts. The illustrations on this page show the Mack pole setter designed by Frank Mueller, the engineer of the Mack Brothers' Motor Car Company, of Allentown, Pa., one of the divisions of the International Motor Company, 30 Church Street, New York City.

This machine is now in use by the Bell Telephone Company, of Philadelphia, and is the Mack Company's regular three-ton chassis, having its platform reinforced with a heavy I-beam and being fitted at the rear with a boom for supporting the drilling apparatus. The drilling apparatus, which is clearly seen in the illustrations, is a monster tool built upon the same principle as a carpenter's extension drill. A solid drill about a foot long furnishes the pull, and a disc-like plate, with tooth-cutting edge, cuts into the ground as the drill revolves.

The disc which does the cutting also acts as a support to the loosened earth, when at a signal to the operator, the drill is raised and drawn from the hole by a cable attached to a standard winch which is operated by the engine of the truck.

After the hole has been drilled and the dirt removed a chain is fastened about the pole to be set, and in less time than it takes to tell it the pole is hoisted and set into the hole. It is claimed that the drill will cut through different kinds of soil, including the toughest kind of clay, with very little trouble. As will be seen by the illustration, the drill is driven by a chain from a winch placed directly in back of the driver's seat. The benefit derived from this apparatus can be imagined when it is known that two men working together can dig about four post holes in a day, and that it takes another considerable gang of men to set the poles. This apparatus can haul the poles to the spot selected, dig the holes and then set the poles. It will not only be a money saver, but it will be possible for pole lines to be set in record time.



Four Views of the Mack Pole Setter

Special attention is called to the photo in the left upper corner, showing the drill removed from the hole, with a load of dirt on its disc. The other views show various operations, such as hoisting up the pole previous to setting, and also the manner in which the boom is lowered previous to hoisting the pole

## New Branches Established

LANDSEN COMPANY, Newark, N. J., has opened a branch at 1000 Michigan Ave., Chicago, Ill.

SWINEHART TIRE & RUBBER COMPANY, Akron, O., has opened a new branch, 102 N. Pryor St., Atlanta, Ga.

INTERNATIONAL MOTOR COMPANY, Baltimore, Md., branch is moving into a new five-story building at 30 S. Hanover St.

CHASE MOTOR TRUCK SALES COMPANY, Minneapolis, Minn., has opened a new showroom at 1507 Hennepin Avenue.

ATTERBURY TRUCK COMPANY has recently opened a branch on Hoadley Place, Hartford, Conn., and reports splendid success.

KELLY-SPRINGFIELD TIRE COMPANY, Akron, O., has opened a new branch and service department, 1843 Euclid Avenue, Cleveland, O.

UNIVERSAL MOTOR TRUCK COMPANY, Detroit, Mich., has opened a temporary branch at 1777 Broadway, until a service building can be secured.

MOTZ TIRE AND RUBBER COMPANY, Akron, O., has opened a branch factory at 2352 Euclid Avenue, Cleveland, O., C. R. Serfass, Manager.

H. E. WILCOX MOTOR COMPANY, Minneapolis, Minn., opened a direct factory branch at 1325 Walnut Street, R. E. Chamberlin, Manager.

UNIVERSAL MOTOR TRUCK COMPANY, Detroit, Mich., has opened a branch at 2216 Michigan Ave., Chicago, Ill., with Chas. Fisher in charge.

PEERLESS MOTOR COMPANY will erect a factory branch and service department at 773 Broad St., Providence, R. I., to be managed by J. W. Breeze.

LOCOMOBILE COMPANY OF AMERICA, Bridgeport, Conn., has established a San Francisco Branch, with temporary quarters at 942 South Grand Avenue.

LOCOMOBILE COMPANY OF AMERICA, Bridgeport, Conn., is erecting a handsome branch store at Atlanta, Ga., corner Peachtree Street and Merritts Avenue.

PHILADELPHIA STORAGE BATTERY COMPANY has opened a new office and supply depot at 516 The Rookery Building, Chicago, Ill., with D. C. Arlington in charge.

KISSEL MOTOR CAR COMPANY has moved its Chicago branch to larger quarters, corner 26th and Wabash Avenue, where it will have 100,000 sq. ft. of floor space.

BESSEMER MOTOR TRUCK COMPANY has established a Boston branch at 903 Boylston St., in charge of Robert C. Howard, formerly of the Autocar Company.

FIRESTONE TIRE AND RUBBER COMPANY, Akron, O., is moving into its new Detroit branch building, which is one of the most elaborate in the country. John Mowe is in charge.

FORD MOTOR CAR COMPANY is erecting a four story building, 150 x 250 ft., to cost \$100,000, at the corner of East Seventh and Santa Fe Avenues, Los Angeles, Cal., as an assembling and service station.

H. E. WILCOX MOTOR CAR COMPANY, Minneapolis, Minn., maker of Wilcox Trux, has opened a Kansas City, Mo., branch at 1325 Walnut St., in charge of R. E. Chamberlain, Assistant Sales Manager of the Company.

FRANKLIN AUTOMOBILE COMPANY, Goodrich Tire Company, Mack Truck Company and the International Automobile Company are having built four steel reinforced concrete and brick garages, each 48 x 128 ft. on Craig Street, Pittsburg, Pa.

THE GRAND RAPIDS MOTOR TRUCK COMPANY, of Grand Rapids, Mich., formerly the Decatur Motor Car Company of Decatur, Ind., has opened a factory branch in Philadelphia at 210-12 North 13th Street. The branch is thoroughly equipped and is in charge of men who are familiar with every detail pertaining to Decatur-Hoosier Trucks.

LOCOMOBILE COMPANY OF AMERICA has opened a factory branch and Service Station at 942 S. Grand Ave., Los Angeles, Cal., for the convenience of their customers in southern California. J. Murray Page, who has been connected with the company for many years is in charge of this new branch, for which a suitable building will be erected at once.

### EVIDENCE OF RAPID GROWTH

WILLYS-OVERLAND COMPANY, Toledo, O., has recently completed its 300 x 400 ft. four story concrete plant.

POPE MANUFACTURING COMPANY, Hartford, Conn., will erect a four story addition to its factory, 192 x 72 ft.

STERNBERG MANUFACTURING COMPANY, Milwaukee, Wis., maker of Sternberg Commercial Cars has broken ground for a large addition to its plant.

SEWELL CUSHION WHEEL COMPANY, Detroit, Mich., has increased its capital stock from \$60,000 to \$300,000, and secured larger manufacturing facilities.

T. W. WARNER & COMPANY, Muncie, Ind., manufacturers of steering gears, transmissions, etc., are building a two story addition to their plant, 100 x 240 ft.

MACK BROS. MOTOR CAR COMPANY, Allentown, Pa., have purchased six acres of ground adjoining their property, which they will utilize for the enlargement of their plant.

FRANKLIN AUTO COMPANY, Syracuse, N. Y., will build a new factory adjoining the main plant, 200 x 156 ft., affording 30,000 sq. ft. additional floor space, devoted to the manufacture of sundry parts.



**The Stegeman Fire Apparatus**

Stegeman Fire Insurance Patrol in the regular service of the Milwaukee Board of Fire Underwriters. It is the second piece of motor-driven fire apparatus in the city of Milwaukee. It is built along truck lines to withstand heavy service and the severe test of negotiating the unimproved roads in the outlying districts.



## Advertisers' Index

<b>A</b>		<b>H</b>		<b>P</b>	
Adams Bros. Co.	72	Gramm Motor Truck Co.	81	Palmer-Moore Co.	80
American Vanadium Co.	68	Grand Rapids Motor Truck Co.	73	Peerless Motor Car Co.	Front Cover
Atlas Chain Co.	76	Hartford Auto Parts Co.	71	Perfection Spring Co.	74
Atterbury Motor Car Co.	78	Hayes Wheel Co.	80	Philadelphia Storage Battery Co.	56-57
Autocar Co.	2	Hazard Motor Mfg. Co.	77	Pierce-Arrow Motor Car Co.	80
<b>B</b>		Heald Machine Co.	61	Polack Tyre Co.	94
Baker Motor Vehicle Co.	96	Hess-Bright Mfg. Co.	91	Poss Motor Co.	75
Bretz, J. S., Co.	70	Hyatt Roller Bearing Co.	70	<b>R</b>	
Briscoe Mfg. Co.	69	Hydraulic Pressed Steel Co.	66	Remy Electric Co.	62
Buckeye Jack Mfg. Co.	72	<b>J</b>		Republic Rubber Co.	71
Buckeye Mfg. Co.	79	Jaccard, J., & Co.	84	Review of Reviews Magazine	82
Buffalo Tube Co.	78	Janney, Steinmetz & Co.	76	Rome Hollow Wire & Tube Co.	75
<b>C</b>		Jones Recorder	74	Ross Gear & Tool Co.	78
Chicago Pneumatic Tool Co.	83	<b>K</b>		Royal Equipment Co.	70
Chilton Co.	65, 69	Kinsey Mfg. Co.	75	Rutenber Motors	73
Commerce Motor Car Co.	72	Koehler, H. J., S. G. Co.	Inside Front Cover	<b>S</b>	
Covert Motor Vehicle Co.	87	<b>L</b>		Sargo Engineering Co.	79
Cramp, Wm. & Sons, S. & E. Bldg. Co.	68	Lauth-Juergens Motor Car Co.	76	Schwarz Wheel Co.	77
Cullman Wheel Co.	64	Lavigne Gear Co.	64	Sheldon Axle Co.	85
<b>D</b>		Lincoln Motor Car Works	90	Sheppard, W. S.	70
Detroit Lubricator Co.	82	Lippard-Stewart Motor Car Co.	67	Smith, A. O., Co.	71
Diamond Rubber Co.	Inside Back Cover	<b>M</b>		Splitdorf, C. F.	73
<b>F</b>		M & P Electric Vehicle Co.	83	Standard Welding Co.	76
Fedders Mfg. Works	75	Mais Motor Truck Co.	72	Stewart, W. F., Co.	78
Federal Motor Truck Co.	Back Cover	Merchant & Evans Co.	79	<b>U</b>	
Firestone Tire & Rubber Co.	53	Mercury Mfg. Co.	79	United States Tire Co.	77
Ford Motor Co.	73	Minneapolis Motorcycle Co., Inc.	80	<b>V</b>	
<b>G</b>		Moller Bros. Controller & Economizer Co.	88	Valentine & Co.	93
General Motors Truck Co.	95	Motor Conveyance Co.	71	<b>W</b>	
General Vehicle Co.	81	Motz Tire & Rubber Co.	77	Westinghouse Electric & Mfg. Co.	67
Gibney, James L. & Bro.	89	Muncie Gear Works	74	Weston-Mott Co.	86
Goodyear Tire & Rubber Co.	65	<b>N</b>		White Co.	74
Gould Storage Battery Co.	66	New Departure Mfg. Co.	63	Willys-Overland Co.	92

### VETERINARY MOTOR AMBULANCE

The Louisiana State Society for the Prevention of Cruelty to Animals recently purchased from General Motors Truck Company a specially designed horse ambulance for use in New Orleans. The body will be mounted on a two and a half-ton chassis, and has been built so as to convey sick horses in a humane way. Side and end doors are provided, and the floor is mechanically operated for raising and lowering. It can also be extended outside of the ambulance for the depositing of disabled animals. This initial step by the Society will undoubtedly be followed by other branches throughout the country who have been seeking a solution for the quick conveying of sick horses.



Federal Fire Vehicle Used by Tupelo, Miss.

This shows the Federal fire-fighting vehicle used by the city of Tupelo, Miss. It is mounted on a standard model C chassis and is exactly the same as the regular Federal trucks except that it has no governor. It has been in use for about eight months and is giving good service.

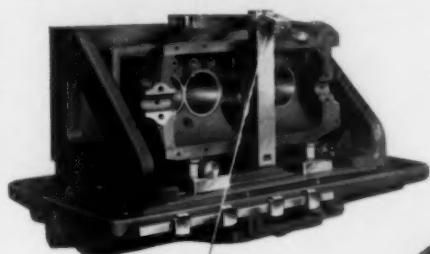
### STOP MUFFLER CUT-OUT

The New York City Board of Aldermen have unanimously adopted an ordinance prohibiting the use of the muffler cut-out in the city limits. This action has been followed by several other cities and is likely to become universal. This will relieve our cities of much unnecessary noise, as it has been proven that the power gained by the use of the muffler cut-out is so slight as to be of no value in city traffic.

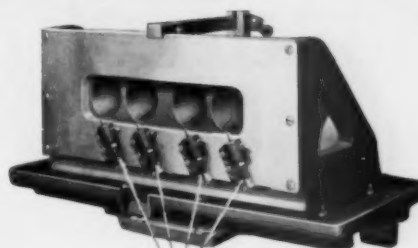
B. F. GOODRICH COMPANY, Akron, O., is supplying commercial car owners with record blanks on which to keep a data of the work accomplished by each car during the day and also record statements to keep the record for each month. The daily reports are made on cards and the monthly reports on large sheets. These are supplied gratis to all commercial car owners who apply for same.

J. H. KNIGHT, England, builder of the first two-seated petrol car made in that country, has devised wood as a substitute for the rubber tire, and has evolved a tire made from ash, which in regard to riding comfort and efficiency appears to be quite equal to solid rubber.

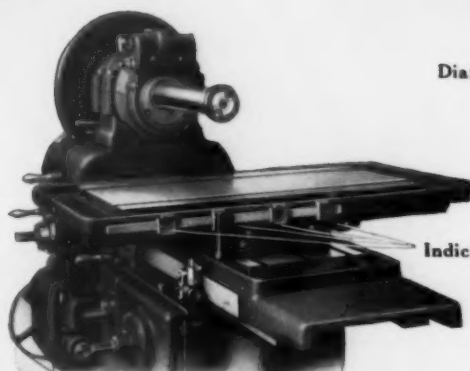
When in doubt, write the CCJ. Sometimes there are little points which arise which have been successfully overcome by someone who has had a similar experience. Write to us so that we can publish your inquiry—and, if we cannot give you the information ourselves, possibly some of our readers can. This service is absolutely free.



Quick Clamping Device



Diamond Truing Device for Each Hole



Indicator Dogs

## SPECIALIZED EQUIPMENT FOR FINISHING GAS ENGINE CYLINDERS

The tools shown here are the result of years of careful study on the problem of "How to Finish Cylinders Internally Rapidly, Accurately and Economically."

The centre cut shows an end view of our style No. 60 Cylinder Grinding Machine, equipped with extra long cross slide table, suitable for handling cylinders cast three, four or six "en bloc." The cuts on either side show two views of one of our regular Style "C" jigs machined and fitted to accommodate a four-hole cylinder.

Note the careful attention that has been given to every little detail to make this jig rapid and accurate to operate. Interchangeable face plates, making the same jig serve for holding cylinders of different styles and sizes, locating plugs for quickly locating the cylinder, a quick clamping device for clamping it, and steady blocks that are self-adjusting—are some of the things that make rapid handling possible.

Then, too, as you look again at the centre cut you will notice four sliding indicator dog blocks and one indicator finger, shown on the front of the table. These dog blocks

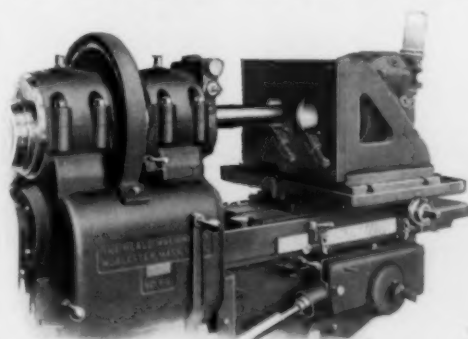
are so adjusted that the grinding spindle may be changed from one hole to another without measuring each time, each centre distance being determined by bringing the line on the indicator dog block corresponding to the centre line of the hole to be ground into line with the one on the indicator finger, thus maintaining accurate distances between centres at all times.

A diamond truing device is placed in front of each hole, so that a diamond is in position to true the wheel at any time it should be necessary when grinding any hole, without transferring it from one hole to another.

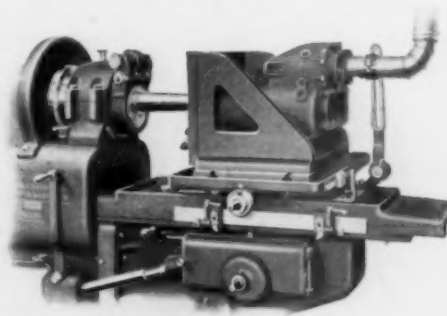
It is such little things as these that put the finishing touch of refinement into this machine, and extra dollars into the pocket of the user.

The two lower cuts show the machine arranged for grinding "twin" cylinders; also the method of piping used to carry away the dust.

We would like mighty well to go into this matter further with you, and are always glad and willing to answer questions.



The  
Heald  
Machine  
Company



WORCESTER, MASS.—12 NEW BOND STREET

# Manufacturers and Dealers

## What Does Service Like This Mean to You

# ?

LOS ANGELES, CAL.  
 SAN FRANCISCO, CAL.  
 HOWARD AUTOMOBILE COMPANY  
 987-991 SOUTH OLIVE STREET  
 AGENTS AND DISTRIBUTORS  
 AUTOMOBILES FOR PACIFIC COAST  
 LOS ANGELES, CAL.



J.I. CASE THRESHING MACHINE CO.  
 HIGH CLASS CHAIN AND TREADLE MACHINES  
 OAL-B HOME OFFICE AND FACTORY: RACINE, WIS.  
 NEW YORK BRANCH: 1080 BROADWAY  
 G. A. LEWELLEN, BRANCH HOUSE MANAGER

MADE IN U.S.A.  
 PATENTED IN U.S.A.  
 PATENTED IN U.S.A.  
 PATENTED IN U.S.A.

New York, N. Y., March 27, 1912.

Remy Electric Co.,  
 1926 Broadway,  
 City.

Gentlemen:-

It affords us pleasure to testify to the efficiency of your service department. Your evidently increased desire to see that the Remy magneto gives satisfaction to customers, backed by your ready support in overcoming complaints and making adjustments cannot fail to rapidly establish the Remy magneto in the confidence of most manufacturers and owners of automobiles.

Yours truly,

G. A. Lewellen  
 Branch House Manager.

Remy Electric Company,  
 Anderson, Ind.

Gentlemen:-

We write this letter to express our appreciation of Remy service generally.

The fact that your Company has established service stations throughout the country certainly should be appreciated by manufacturers, dealers and users.

Yours very truly,  
 HOWARD AUTOMOBILE COMPANY,  
 For

*H. Howard*

Enc. P. S. R./E. A. P.

Did you ever hear of Ignition Service before the Remy Electric Company created it?

Are you taking advantage of this Remy Service, making it a valuable part of your complete car service?

Let us tell you more about the The Best Magneto and Real Magneto Service.

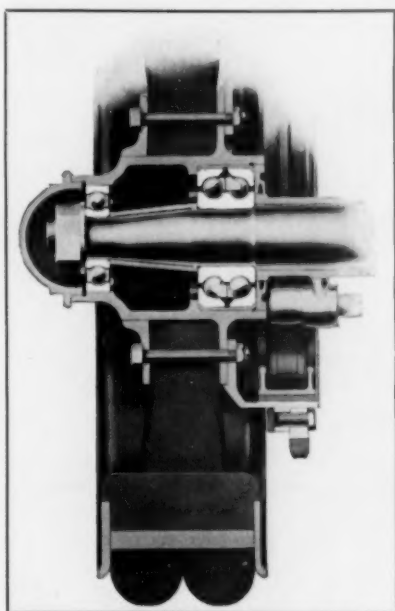
Factories and General Offices at Anderson, Ind.



American  
Made  
for  
American  
Trade

## NEW DEPARTURE GUARANTEED BALL BEARINGS

Guaranteed  
for  
Commercial  
Truck  
Work



In the application shown on this page, the double row is mounted within the spoke or load center of the wheels on a truck axle in such a way as to carry radial and all direction thrust and to take the major portion of the load. The outer single row bearing is floated to carry radial loads only and to steady the wheel.

The bearing equipment of the modern motor vehicle of any type or load rating is vital to the efficiency of the car.

New Departure ball bearings are preferred to any other type because of the following qualities:--

The double row type has two rows of balls, thereby increasing the load carrying capacity and providing ample safety margins for the inevitable overloading of the trucks.

The double row bearing is equally efficient for thrust or radial loads. This bearing carries maximum stresses from any direction simultaneously and without friction or cramping of the balls.

The double row embodies a safe ball bearing unit in which the adjustment and alignment are absolutely maintained under all conditions.

The double row ball bearing economizes space, materials, time and labor of mounting and cost.

This bearing is, therefore, superior for heavy duty required in motor trucks because of its excessive strength, double service, double efficiency and guaranteed durability.

We maintain an engineering service department in which highly specialized consideration of your bearing problems is at your command. Write us today.

### The New Departure Mfg. Co., Bristol, Conn.

Western Branch, 1016-17 Ford Bldg., Detroit



## CULLMAN SPROCKETS and Differentials

in stock and to  
order.

Send for catalog  
and let us quote  
you on your re-  
quirements.



**CULLMAN WHEEL COMPANY, CHICAGO**  
1351 GREENWOOD TERRACE



Positive  
Compact  
Dust-Proof  
Irreversible

## LAVIGNE

### Steering Gears

**POSITIVELY** No Back Lash  
No End Thrust  
No Loose Parts

Takes Up Automatically

**FOR TRUCKS**  
**DELIVERY WAGONS**  
**TAXICABS**

**THE LAVIGNE GEAR CO.**

Corliss, Wisconsin

## Tires You Ought To Know

See what our 13 years' experience has brought forth in Motor Truck Tires—a truck tire for every service.

Each is a masterpiece of its type.

Certainly no truck owner, anxious to pare operation cost to the lowest figure, would put any money in tires without investigating the Goodyear line.

Write us.

Tell us the make and model of your truck; the duties it performs; the kind of roads and streets over which it is driven.

Your letter will be answered by one of our tire experts, whose life business is solving tire problems.

And you will receive our new 8 page 12 x 18 circular that shows our full line of Motor Truck Tires in large illustrations—and describes each minutely.

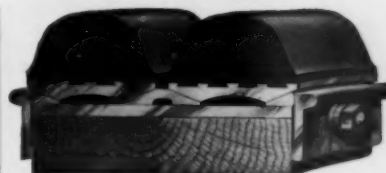
Write today and the Circular will come by next mail.

**The Goodyear Tire & Rubber Company**  
Akron, Ohio

**GOODYEAR**  
AKRON, OHIO

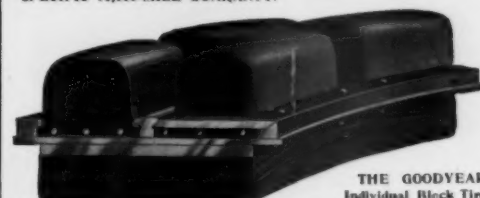
Branches and Agencies  
in 103 Principal Cities.  
We Make All Kinds of  
Rubber Tires.  
Main Canadian Office,  
Toronto, Ont.  
Canadian Factory,  
Bowmanville, Ont.

**"A Tire for Every Service"**



THE  
GOODYEAR  
10,000  
MILE  
DEMOUNT-  
ABLE  
SOLID TIRE

For heavy duty trucks. Easy on and off. No need of tire-applying station. No removing wheel. Job done by your man in your garage during spare time. Rims fit S.A.E. Standard wheel. Tire has metal subbase. To this metal is secured a hard rubber base. Soft rubber tread is vulcanized to hard rubber base. Tire cannot wear out at base before tread wears out. THIS TIRE CARRIES A SPECIFIC 10,000-MILE GUARANTEE.



THE GOODYEAR  
Individual Block Tire

For heavy duty trucks requiring exceptional traction and non-skid feature on rear wheels. Each block has its individual fastening. Economical and convenient. Instead of carrying extra tires you need but a few extra blocks. To remove a damaged block, simply loosen one block—and not a half dozen. Individual fastening holds block securely. Block cannot work loose, or chafe underneath.



THE GOODYEAR-  
MOTZ SOLID TIRE

For high wheel package delivery wagons or high speed trucks. No expert help required in applying. No braiding of side wires. No tools needed except simple hand tool. Applied under compression. Dust, grit, etc., cannot work under it. Distortion is confined wholly to tread. Tough and resilient rubber. No stress at base. Tire remains on rim until worn out. Creeping impossible. Applied to single piece or demountable clincher rim.



AND



are now being offered new subscribers for \$2.00. That is the regular price of **THE COMMERCIAL CAR JOURNAL** alone. This offer lasts only until the limited supply of Specification Tables is exhausted. We will not print a second edition this year.

The Specifications show at a glance every detail of over 300 models of 1912 Commercial Cars. It is an invaluable reference for everyone interested in any way in commercial motor cars.

The **COMMERCIAL CAR JOURNAL** (which is the finest journal of its kind in the world) each month contains illustrated descriptions of two or more of the cars listed on the Table of Specifications and explains the class of work for which they are best adapted, as well as how to use them efficiently and economically.

Only by ordering the **COMMERCIAL CAR JOURNAL** at once can a subscriber be sure of getting the Specification Table. **SEND THE COUPON WITH \$2.00**

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CHILTON COMPANY, Philadelphia  
For enclosed \$2.00 enter me as a subscriber for the  
CCJ for one year; also send 1912 Table of Spec-  
ifications of Commercial Cars.  
Name.....  
Street.....  
City.....  
State.....



## MAKE YOUR OWN BATTERY TESTS

ALSO READ THIS TESTIMONY  
OF A MAN WHO DID

Wide awake electric vehicle users who keep tab on battery first cost, frequency and cost of renewals, mileage per charge, total mileage, attention required and efficiency of service are invariably well pleased with Gould Batteries. Here's a typical example:—Unbeknown to us, a prospective battery user wrote for advice to the manager of a large mill which uses Gould Batteries on their delivery trucks. Here is the answer he received:

*"We have for many years used all makes of storage batteries to determine the best for our purpose and by actual experience and practical tests have come to the conclusion that the Gould is the best lead battery in the market. We now use same exclusively in all our cars built for lead batteries. We have found the Gould people straightforward and honest and should you enter into business relations with this concern, we believe you will be treated in the same spirit."*

This letter has fallen into our hands. You can have names on request. We wish all Gould Battery users made their own tests. It's a good habit that would save money for the users and give us more customers—more performance figures.

The fairest thing we can suggest is—"Investigate." Learn the facts for yourself. We are prepared to give you abundant information on this subject. Tell us your needs.

**Gould Storage Battery Co.**

General Offices: 341 Fifth Ave., New York

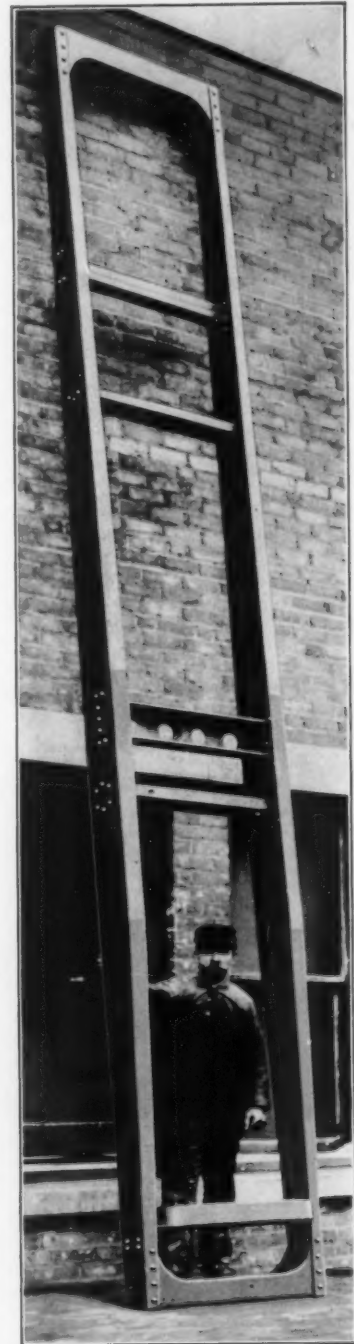
Boston: 89 State Street. San Francisco: 904 Rialto Bldg.  
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WORKS: Depew, N. Y.

Agents in Washington, D. C.; Kansas City, Mo.; Denver, Col.;  
Detroit, Mich.; Topeka, Kan.; Los Angeles, Cal.; Seattle, Wash.  
Full stock carried in all cities where we have offices or agents.

39

## Hydraulic Pressed Steel Co.



## TRUCK FRAMES

$\frac{1}{2}$  TON TO 10 TON

HYDRAULIC PRESSED STEEL CO.

CLEVELAND, OHIO

R. B. McMULLEN, General Sales Agent, Chicago, Ill.



Price, \$1775 Complete  
Capacity, 1500 Pounds

## More Strong Selling Points on Lippard-Stewart Delivery Cars

*In our last advertisement we discussed (1) the economies of the small motor with large gear reduction; (2) the elimination of unnecessary parts; (3) the accessibility of all parts on the Lippard-Stewart. Following are some of the additional advantages of this remarkable delivery car.*

**Left-Hand Steering**—With the gear-shifting and brake levers in the center and the steering post at the left of the car, the driver can enter or leave the Lippard-Stewart from either side.

This saves time and is a great convenience in making deliveries. It permits the driver to alight on the sidewalk instead of in the mud. It also gives him a better view of passing vehicles and lessens the chance of accidents.

**Improved Spring Suspension**—Lippard-Stewart spring suspension lessens road shocks and reduces vibration—the most destructive factor in the operation of a motor vehicle. The more completely the road shocks can be absorbed by the springs, the longer the mechanism will last and the less will be the cost for repairs and for tire renewals.

Full-elliptic front springs on the Lippard-Stewart have twice the shock-absorbing qualities of ordinary semi-elliptic springs. At the rear an ingenious combination of a long semi-elliptic with a coil spring makes the car ride almost as easily empty as when loaded.

**Mechanical Excellence**—All of the mechanical features of the Lippard-Stewart are of well-known, recognized excellence. The same motor has been used for more than two years in the hardest kind of taxicab service. The transmission is of standard type, strong enough for a 40 h. p. motor instead of the 22 h. p. Lippard-Stewart engine.

The clutch is of the multiple-disc type used on the highest grade cars. The axles are of Timken make, specially built for the Lippard-Stewart. Wheels are of the heavy artillery type, with thick, sturdy spokes.

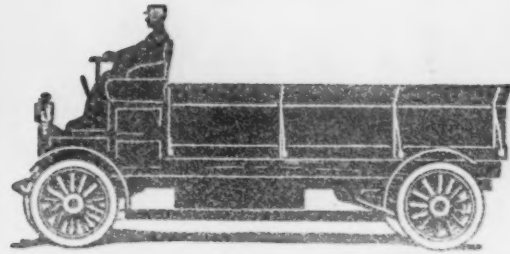
Ignition is furnished by a Bosch magneto, the recognized standard of the automobile world. And so all through—there is not a single mechanical feature whose worth has not been thoroughly proved.

**Handsome Lines — Beautiful Finish**—Wherever seen, Lippard-Stewart cars attract attention by reason of their handsome design. The graceful French type of hood; strong, substantial, sweeping fenders; big wheels and beautiful bodies—appeal to everyone. The Lippard-Stewart car is a constant advertisement for the progressive merchant who owns one.

These are only a few of the many strong selling points of the Lippard-Stewart—features which appeal to the customer and which make the car a good selling proposition for the dealer.

Write for our catalog and further information about the money-making possibilities of this car. Excellent territories are still open, and we are always glad to get in touch with live dealers. We have the facilities to make prompt deliveries.

**LIPPARD-STEWART MOTOR CAR CO.**  
Buffalo, N. Y.



## For City Traffic The Electric Truck Is Unsurpassed

THE ease with which the electric truck can be controlled and its quick acceleration make it ideal for use in congested streets.

Its power plant is the vital part. Insure satisfactory operation by equipping your truck with

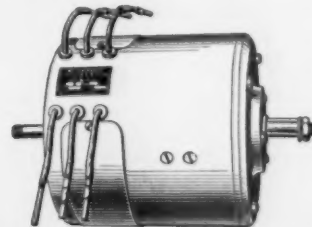
## Westinghouse Motors and Controllers

Back of Westinghouse vehicle equipment lies the longest record of experience in the field of electric transportation. As a result, Westinghouse vehicle motors and controllers give service that brings constant satisfaction to the truck user and increasing credit to the truck builder.

See that your truck has Westinghouse equipment. Write Dept. 19 for full information today.

**Westinghouse Electric  
& Mfg. Co., East Pittsburgh, Pa.**

Sales Offices in 45 American Cities



**WESTINGHOUSE**  
the **MOTOR** you  
never have to think about

# VANADIUM

## The Steel of Ultimate Quality

ELASTICITY

STRENGTH

TOUGHNESS

ENDURANCE



Cut from Vanadium Steel Crankshaft twisted cold  
Elastic Limit 116,000 lbs.

Vanadium is the only element that greatly increases the elastic limit and dynamic strength of steel without impairing its ductility

*Booklets and expert advice on application*

## American Vanadium Company

Manufacturers of Ferro Vanadium

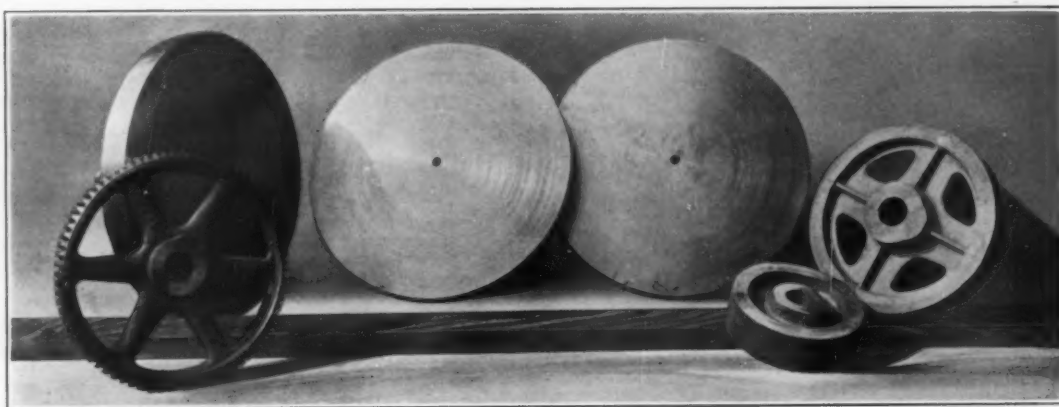
Immediate shipment, any quantity

339 Frick Building, PITTSBURGH, PA.

LONDON

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## Pivot Discs and Gear Wheels for Emergency Dams, Panama Canal, made of CRAMP'S BEARING AND GEAR BRONZES

### TESTS MADE BY THE U. S. GOVERNMENT

Tensile strength	- - - - -	122,000 lbs. per sq. in.
Elastic limit under tension	- - - - -	89,000 " " " "
Elastic limit under compression	- - - - -	58,000 " " " "
Permanent set at 100,000 lbs. per sq. in. compression,	- - - - -	.014"

The above figures are the most remarkable ever obtained with bronze bearing metals and gear metals. Each revolving pivot disc

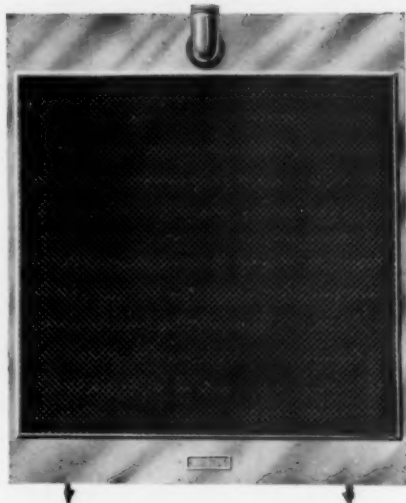
43 inches diameter supports 7,000,000 pounds. Our experience in important engineering work of this character and in other lines equally important will be useful to you in furnishing bearings for your trucks. If you are contemplating using worm drive gearing for your axles our gear metals will be of great service to you. We believe you will use this construction ultimately if not now.

*Our guarantee of quality, uniformity, and fair treatment is back of every casting sold.*

**The Wm. Cramp & Sons Ship & Engine Building Co., Philadelphia, Pa.**



## Briscoe Truck Radiators



Detroit Honeycomb Type

The Detroit Honeycomb Radiator is the strongest and most efficient Truck Radiator made. It is built on scientific principles, has a free water circulation and in case of accident is easily repaired. It is used exclusively on Grabowsky, Rapid, Reliance and other Motor Trucks.

*Write us for Descriptive Catalogue*

**Briscoe Manufacturing Co.**  
Detroit, Mich.      Newark, N. J.

## Can You Use a List of 5000 Well-Rated Commercial Car Owners?

We have one. It is just off press.

They are the people to get in touch with to sell additional Commercial Cars, Parts, Accessories, and Supplies.

If you are interested send for information about getting this list practically free.

**THE  
COMMERCIAL  
CAR JOURNAL**

PUBLISHED BY

**Chilton Company**

Market and 49th Sts.  
PHILADELPHIA

COMMERCIAL CAR JOURNAL  
Market and 49th Sts., Philadelphia  
We can use the Commercial Car Owners' List. Please send particulars.

## Having Trouble With Brakes?

Let us solve your brake problems.  
First get a set of—

# DUPLEX

EXTERNAL  
BRAKES

This is ONE brake for you to use. It has no equal. Simple in design. Excellent in construction. The best possible material.

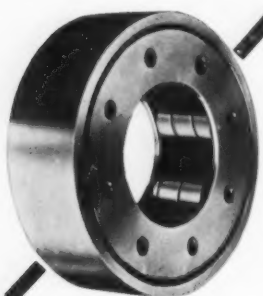
DUPLEX acts instantly. Either forward or backward. Never fails. Gives safety, security, satisfaction.

We make special brakes—brakes to order. Send us your requirements.

*Let Us Quote Prices*

We also make Raybestos Friction Facing,  
Raymond Brakes and Gyrex Mixer :: ::

**THE ROYAL EQUIPMENT COMPANY**  
484 HOUSATONIC AVE. BRIDGEPORT, CONN.



The demand for bearings that will not crush under load has given HYATT ROLLER BEARINGS a big lead over all other types.

The flexible principle is a thoroughly tested feature and enables the bearing to withstand sudden shocks and strains and meet successfully the conditions encountered in automobile construction.

Perfect lubrication is made possible by the right and left spirals which distribute the oil evenly over the entire surface of the bearing. Grit and dirt are positively arrested and carried to the inside of the roller. These features insure long life to the bearings.

Our Engineering Department will be glad to go over your plans with you.

**Hyatt Roller Bearing Company**  
Detroit, Michigan

## Magneto Bargains

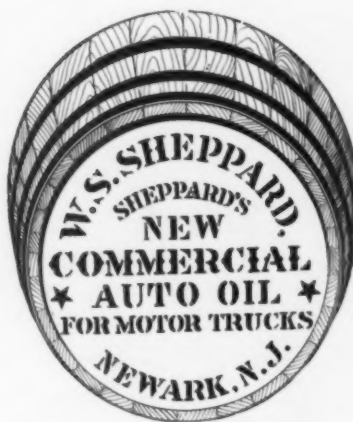
\$30.00 for a \$105.00 6 cylinder  
\$20.00 for a \$93.00 4 cylinder  
\$18.00 for a \$65.00 2 cylinder  
\$16.00 for a \$60.00 1 cylinder

Imported U. & H. High-Tension  
Magnetos Less than Import Cost

**Circular and Price Lists Free**

**J. S. BRETZ COMPANY**

250 W. 54th Street  
NEW YORK



**You Do Know**

your trucks will not run without lubricants, if you are not an expert.

**You Don't Know**

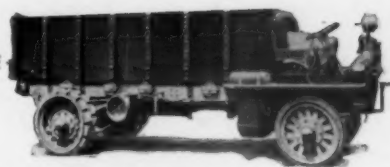
the quality or characteristics of the lubricants you are using, or the importance of selecting lubricants best suited for the various parts of the trucks you operate.

This is our specialty. Our 25 years' experience with gas engine lubricants will help you. Our "IDEAL" brand is the oldest and highest grade made for pleasure cars.

Our Commercial brand is made from Pennsylvania crude. It is a high flash and high viscosity oil. In three grades: Light, Medium and Heavy, and is sold direct to the consumer and recommended by many truck agencies.

We can select the oil and gear lubricants for any make of truck. Write for prices and advice, to

**W. S. SHEPPARD**  
21 Lawrence St. Newark, N. J.



DREADNAUGHT, Model A-6. Capacity, 6 Tons

## A Pleasure Car

does not necessarily have to be a passenger carrying automobile. A commercial car that is built right and will run 365 days in the year if necessary is a pleasure car.

## B-O-E *Best On Earth*

is a commercial car that is designed and constructed for strenuous service. It does work like a pleasure automobile but it isn't built along these lines. Its designers appreciated that a commercial car has to do real work day in and day out. Note that practically all the weight is carried between the axles and that the construction represents maximum strength.

Made in 2, 3, 5, 6, 7 and 10 Ton sizes

For further particulars, write

**MOTOR CONVEYANCE COMPANY**  
Milwaukee, Wisconsin

1  
OR

1000

IF IT IS PRESSED STEEL  
**FRAMES**

WE CAN FILL  
YOUR REQUIREMENTS

**A. O. SMITH COMPANY**  
MILWAUKEE

## Cone Clutches, Too, in Addition to Universal Joints

By specialization we have mastered the engineering problems of cone clutches to a point where we have for some time been able to supply clutches that meet the most exacting requirements of any given working conditions. State the conditions and we will show you what we can do, just as in the case of universal joints. Blue prints will help. Designers and manufacturers are getting to appreciate us more and more, because our products are right when they come, are right when the bill comes, and come right on time.

**The Hartford Auto Parts Co.**

85 Huyshope Avenue

Hartford, Conn.

## Republic Motor Truck Tires

Will make your motor delivery service more efficient and more economical.



### Because

They are easier to manipulate  
They are more simple in construction  
They have fewer parts  
They are more positive in adjustment  
They have no steel bands or parts to be returned for credit, thereby eliminating express charges and loss of time in shipping.

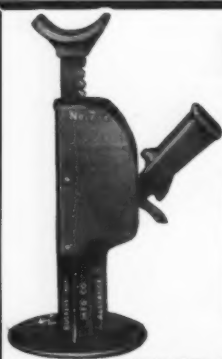
Let us figure on your requirements

**THE REPUBLIC RUBBER CO., Youngstown, Ohio**

### REPUBLIC MOTOR TRUCK TIRE AGENTS

Albany, N. Y., Albany Vulcanizing Works  
Atlanta, Ga., The Republic Rubber Co., 237 Peachtree St.  
Boston, Mass., The Republic Rubber Co., 735 Boylston St.  
Buffalo, N. Y., The Bison Rubber Co.  
Chicago, Ill., The Republic Rubber Co., 1732 Michigan Ave.  
Cleveland, O., The Way-Mitchell-Rigdon Co., 5919 Euclid Ave.  
Dallas, Texas, Slaughter-Randal Co., 2033 Commerce St.  
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Detroit, Mich., Republic Rubber Co. of Mich., 1001 Woodward Ave.  
Kansas City, Mo., Bart S. Adams, 1513 Grand Ave.  
Los Angeles, Cal., Republic Tire & Rubber Co., 1227 S. Olive St.  
Minneapolis, Minn., The Republic Rubber Co., 1514 Hennepin Ave.  
New York, N. Y., The Republic Rubber Co., 229 W. 58th St.  
Philadelphia, Pa., The Lyman Tire & Rubber Co., 328 N. Broad St.  
Pittsburgh, Pa., Lange Motor Truck Co., 8. St. Clair and Eva Sts.  
Rochester, N. Y., Rochester Auto & Supply Co., 352 Main St., E.  
Salt Lake City, The W. C. Hendrie Rubber Co., 210 S. W. Temple  
San Francisco, Cal., Republic Rubber Co. of Cal., Golden Gate Ave. & Hyde St.  
Seattle, Wash., Republic Tire Co., 1425 Broadway  
Spokane, Wash., Interstate Rubber Co., 417 First Ave.  
St. Louis, Mo., The Republic Rubber Co., 1215 N. Broadway  
St. Paul, Minn., The Republic Rubber Co., 76 West 7th St.  
Washington, D. C., J. M. Doyle, 320-2 Pennsylvania Ave.





## BUCKEYE Motor Truck Jacks

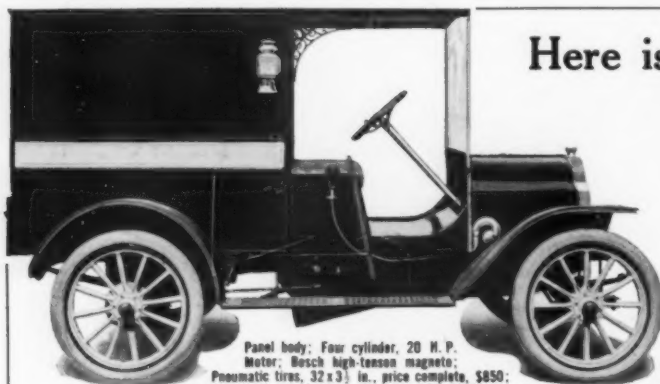
Buckeye Motor Truck Jacks are safe, reliable and made to stand the wear and tear for which they are intended. They are fully guaranteed, and cannot possibly drop with a load. They are made from Steel Drop Forgings, best finish and workmanship throughout.

Get our prices before you place your orders for jacks, we can save you money.

No.	Height Bar Down	Raise of Bar	Height Bar Up	Weight	Capacity	List Price
7	11 $\frac{1}{4}$ "	6 $\frac{1}{4}$ "	18"	16 lbs.	2 $\frac{1}{2}$ tons with formed handle	\$10.00
13	14 $\frac{1}{4}$ "	7 $\frac{1}{4}$ "	20 $\frac{1}{2}$ "	26 $\frac{1}{2}$ "	3 "	15.00
14	14 $\frac{1}{4}$ "	7 $\frac{1}{4}$ "	20 $\frac{1}{2}$ "	33 "	5 "	16.00
9	11 $\frac{1}{4}$ "	6"	17 $\frac{1}{2}$ "	10 "	1 $\frac{1}{2}$ "	6.00

Write today for descriptive catalog. Made only by

**THE BUCKEYE JACK MFG. CO., Alliance, Ohio**



Here is the 1912 Sensation of the  
Motor World

## COMMERCE CAR

Dealers in all parts of the country are already reaping a harvest from sales of the Commerce Car.

We have some choice territory left for good, active dealers. Do not let this great opportunity pass you buy.

Write us for territory and dealer's proposition

**The Commerce Motor Car Company**  
General Office, 633-639 Penobscot Bldg., Detroit, Mich.

Panel body; Four cylinder, 20 H. P.  
Motor; Bosch high-tension magneto;  
Pneumatic tires, 32 x 3 $\frac{1}{2}$  in., price complete, \$850;  
Solid 2 $\frac{1}{2}$  in. truck tires, price complete, \$800.

## Adams Trucks

"Deliver the Goods"

Built in two sizes  
1 ton and 1 $\frac{1}{2}$  ton

An ADAMS TRUCK is a treasure at rush seasons. It is swift, commodious and always on the job. It doesn't get tired. Every part is simple, sturdy and accessible. It requires a minimum amount of care.

WRITE US ABOUT IT

**The Adams Bros. Co.**  
FINDLAY, OHIO



In every respect our Mais internal gear drive is superior to chains. We guarantee these gears for one million miles.

What decides the best truck? The record of the Mais answers—the most mileage at the lowest cost per ton-mile. All other claims are but noise that is empty compared to the sound facts that give the Mais the verdict of best.

Not in the gears alone, but in every feature this nickel steel Mais is the best. It is the product of international experience—it is not a "warmed over" pleasure car.

We could build chain-driven trucks, but we won't. Chains are deficient and antique. Chains lose power, sag, get dirty, break, get out of alignment, and cannot be lubricated. The best European truck builders discarded chains long ago.

We use internal gears on the Mais. They conserve power, are enclosed in dust and grit-proof oil-tight construction, and never need replacement.

For Catalog and data on the Mais, write

Dealers' Dept. **THE MAIS MOTOR TRUCK CO.** Indianapolis Ind.



"Safety"—spell it the new way and its "F-o-r-d." Certainty of operation—strength and lightness, made possible by Vanadium steel—simplicity of construction—these make the Ford the safest car in the world. A reason why every third car on the highway this year will be a Ford.

All Fords are Model T's—all alike except the bodies. The two-passenger runabout costs \$590—the five-passenger touring car \$690—the delivery car \$700—the town car \$900—f.o.b. Detroit, completely equipped. Get latest catalogue from Ford Motor Company, Detroit, Mich.



**From start  
to finish**

The problem of economical hauling is solved and the line of deliveries is straightened by the power wagon that is free from motor troubles. No matter whether you need a truck capable of hauling the heaviest loads of bulky freight, coal, ores, iron, or general merchandise, or whether you require a light, swift-running delivery car for retail work,

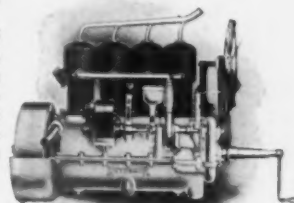
**THE  
RUTENBER  
MOTOR**

for heavy work or light, RUTENBER Motor is the motor of performance.

More than a score of the highest grade cars in America today are equipped with RUTENBER Motors. The best of trucks are those which place their reliance on the RUTENBER.

Send for Booklet.

should throb under your hood. It means efficiency, endurance, rugged honesty of service, economy of maintenance and unfailing power. For high speed or low,



**The  
Western Motor Co.**  
Marion, Indiana



**SPLITDORF  
MAGNETO**

*"Always There"*

With the installation of SPLITDORF IGNITION—SPLITDORF SERVICE is at your command.

And SPLITDORF SERVICE is courteous and thorough and practical—from the factory and main distributing center in New York, through every branch office and other selling artery all over the country, to the crowning detail of personal road men.

And these road men—experts in their calling and human in their intelligence—have one duty to perform and that duty is to give their services to every SPLITDORF user for the asking.

If there is any "kink" in your ignition system—if it is not "right up to the mark" let SPLITDORF SERVICE straighten it out for you.

Your satisfaction is our satisfaction so don't be afraid to call upon us.

Write for catalog

**C. F. SPLITDORF**

Walton Ave. and 138th St.

Branch, 1679 Broadway, NEW YORK

CHICAGO BOSTON LOS ANGELES  
DETROIT KANSAS CITY SAN FRANCISCO

**Grand Rapids  
Motor Truck Co.**

MANUFACTURERS OF THE

**"DECATUR"  
HOOSIER LIMITED  
1 1/2 TON TRUCK**

Formerly made by the DECATUR MOTOR  
CAR COMPANY, DECATUR, INDIANA

Some choice territory still open. Address

**GRAND RAPIDS  
MOTOR TRUCK CO.**  
North St., Grand Rapids, Mich.

**"Reliable Springs are  
More important on  
Commercial Cars than  
on Pleasure Cars."**



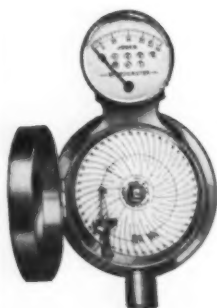
**THE PERFECTION SPRING CO.**

Cleveland - - - - - Ohio

## THE JONES RECORDER For DELIVERY ECONOMY

The Jones Recorder is one of the profit-making parts of the commercial truck. It gives complete daily record (in chart form) of trips, stops, duration of stops, duration of runs, etc., together with the speed. It enables you to check every movement of your delivery wagons or trucks. It gives you accurate cost of maintenance.

**A VERY ECONOMICAL  
DEVICE FOR ALL TRUCKS**



The Jones Recorder consists of a strong brass casing, containing a clockwork and flexible shaft from the drive wheel of the vehicle.

*Ask for particulars*

**THE JONES RECORDER**

Broadway and 76th St.  
New York City

## WHITE MOTOR TRUCKS

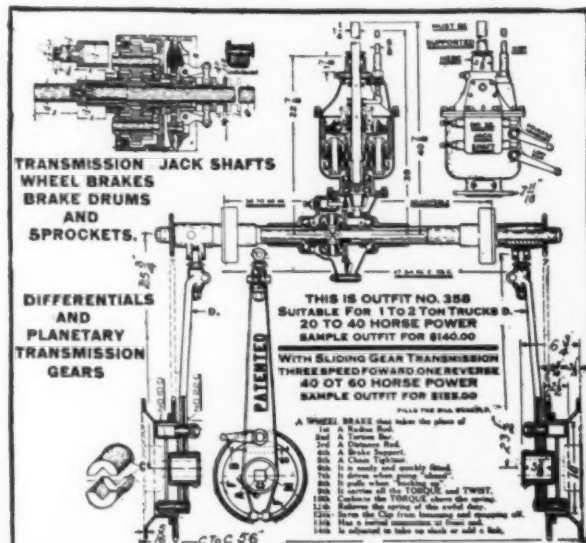


**T**HERE are more than eight hundred owners who operate from one to fifty White trucks.

The supremacy of White trucks is the natural result of superiority.

**The White Company**  
CLEVELAND

MANUFACTURERS OF  
GASOLINE MOTOR CARS, TRUCKS AND TAXICABS





# THE KINSEY MANUFACTURING CO.

TOLEDO, OHIO

*Manufacturers of Auto Parts—*

**Kinwood Radiators, Fenders**

**Kinwood Oilers, Gaskets**

**Kinwood Steel Frames, etc., etc.**

**SPECIAL METAL STAMPINGS**

## AUTOMOBILE TUBING

### Seamless Brass and Copper Tubing

of all kinds,—any size, any gauge, any temper  
From  $\frac{1}{2}$ " down to the finest.



We are supplying many of the largest and best automobile concerns in the country with tubing. Why not let us quote you on your requirements? Our **QUALITY** is guaranteed,—our prices are low as quality will allow, and prompt deliveries are guaranteed. Could you possibly ask for more? **Correspondence solicited.**

**ROME HOLLOW WIRE & TUBE COMPANY - Rome, New York**

**\$800**

DESIGNED  
AND BUILT  
EXPRESSLY

For COMMERCIAL USE

## The POSS MOTOR WAGON

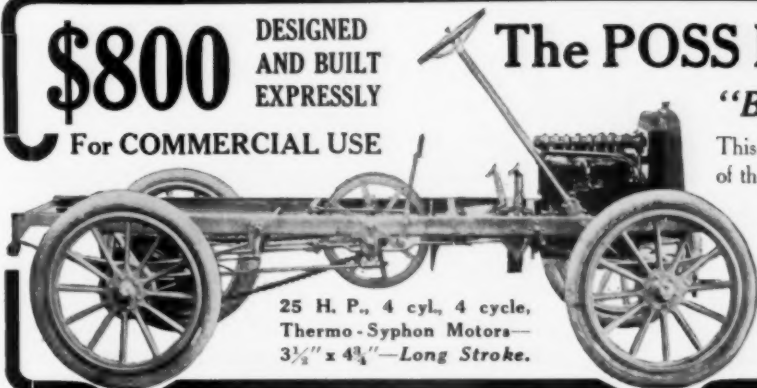
**"Built for THE PURPOSE"**

This is the secret of the Power, Strength and Durability of the Engine and Chassis of the Poss Motor Wagon.

It is not a converted pleasure car. It has not a pleasure car engine. It has not a pleasure car transmission. It is a Power Wagon, with Power.

*Wide-Awake, Hustling Agents Wanted  
Send for our Proposition To-day*

506 Howard Street  
**THE POSS MOTOR CO., Detroit, Mich., U. S. A.**

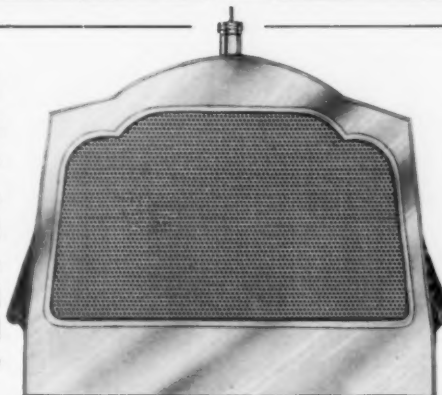


25 H. P., 4 cyl., 4 cycle,  
Thermo-Syphon Motors—  
 $3\frac{1}{2}$ " x  $4\frac{3}{4}$ "—Long Stroke.

## FEDDERS

**Real Square Tube Radiators**

Commercial cars require radiators that will stand many shocks and much hard usage. This was one of the weak parts of the commercial car but the test of time has proved that **FEDDERS** radiators render efficient service.



¶ We want to figure with you your requirements for the coming season. If you haven't used Fedders radiators you probably have had a great deal of radiator trouble and you may think that their isn't a radiator built that will give you satisfaction. If this is the case we would like to have an opportunity of demonstrating that the Fedders radiator will stand the wear and tear and shocks of the commercial car and that manufacturers who equip their commercial cars with the Fedders have practically no radiator trouble. We can convince you. Will you give us the opportunity?

**FEDDERS MFG. WORKS**  
BUFFALO :: NEW YORK

## MOTOR TRUCK

STRONG



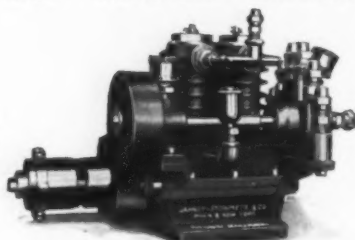
STURDY

### LEAKLESS

ALL SIZES IN STOCK

## COMPRESSED AIR MOTOR TRUCK STARTERS

STARTS



PUMPS TIRES

PURE AIR is SAFE and CLEAN  
AIR PRESSURE TANKS—ALL SIZES

JANNEY-STEINMETZ --- PHILADELPHIA

## Gaylor — Atlas Grips for Solid Tires

### ARE

Efficient in Service  
Easily and quickly attached  
Simple in construction  
Self-adjusting to rims  
Harmless to tires  
Made of Chrome Vanadium Steel  
Extremely durable  
Guaranteed against defects  
For single and dual type tires  
Needed all the year round  
Inexpensive

### ARE NOT

Heavy and Cumbersome  
Noisy  
Complicated in construction  
For Winter Use only  
Hard to attach



A Set in the tool box guarantees your delivery service.

Catalogue on request

**Atlas Chain Co.**

Bush Terminal No. 4  
BROOKLYN, N. Y.

## Motor *Lauth Juergens* Trucks

**Are Guaranteed For Life**

WHAT MORE CAN WE SAY?

**Made in 1, 2, 3 and 5-Ton Sizes**

Send for Catalogue

**The Lauth-Juergens Motor Car Co.**  
FREMONT, OHIO



## Motor Truck Bands

MADE WITHIN THE FOLLOWING

### Dimensional Tolerances

(ADOPTED BY THE SOCIETY OF AUTOMOBILE ENG.)

#### 1.—Tolerance in circumference of felloe band:

	Plus	Minus
Before application to wheel - - -	1-32"	1-32"
After " " " - - -	1-16"	1-32"

Variation from precise measurement shall be uniform over entire width of band.

#### 2.—Tolerance in width of felloe band:

	Plus	Minus
Up to and including 4" - - -	1-32"	1-32"
4—1-16" to 6" - - -	3-64"	3-64"
6—1-16" to 12" - - -	1-16"	1-16"

#### 3.—Variation in trueness of band when placed on surface plate: Band shall touch at all points within 1-32" up to and including 6" width. Over 6" width within 1-16".

#### 4.—Variation in thickness of band: .006" plus or minus.

#### 5.—Trueness to round. The radial tolerance on the wheel when felloe band is applied shall be 1-16" plus or minus. This plus or minus tolerance must not occur at diametrically opposite points. There shall be no flat spots or kinks in felloe band on the finished wheel.

**The Standard Welding Company**

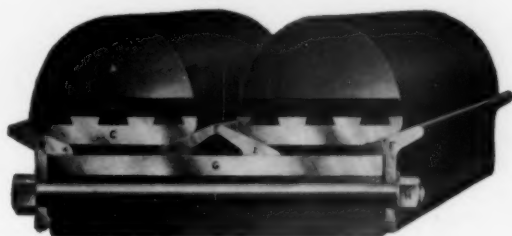
CLEVELAND

NEW YORK

CHICAGO

DETROIT

## The United States Standard Motor Truck Tire (Demountable)



has established standards of tire economy never before known.

No more delays while tire replacements are being made. Changes can be made by the driver anywhere in fifteen minutes' time or less.

Guaranteed for 10,000 miles if used in one year.

Write us for descriptive literature.

**United States Tire Company**  
New York

## SCHWARZ



### MANY TYPES BUT ONLY ONE GRADE!

The SCHWARZ WHEEL IS MADE TO meet every requirement of every type of every motor vehicle, and regardless of the style it is always of one quality,—the very best.

The automobile manufacturer has learned that if he wants to sell his cars without making any excuses for the wheels that he can answer every question satisfactorily in one word,—SCHWARZ!!

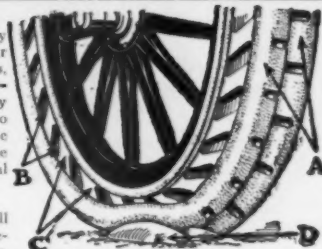
Why experiment? The reputation of the Schwarz Wheel is established. It is used on all leading Motor Trucks.

**SCHWARZ WHEEL COMPANY**  
FRANKFORD, PHILADELPHIA, PA.

## Give Lowest Operating Cost

Motz Cushion Tires will not only give the mechanical parts of your car the same protection as pneumatics, but will greatly reduce your per-mile fuel expense. So conclusively has this been proven that twenty-two out of a possible twenty-five Electric Pleasure Car builders, as well as nine builders of high-grade Commercial cars, are using Motz Tires.

And with these tires you will never be bothered by costly punctures, rim cuts or dangerous skidding. And you'll have tires guaranteed for 10,000 miles—two years.



A—Shows double, notched treads.  
B—Shows undercut sides.  
C—Shows slantwise bridges.  
D—Shows absorbing means when passing over an obstruction.

## Motz Cushion Tires

are as easy-riding as any properly-inflated pneumatic tire. Note their construction, their double, notched treads, which prevent skidding and distribute the weight to the sides. The undercut sides allow free action of the bridges. The slantwise, elastic bridges give and yield like the air in a pneumatic tire.

They fit any standard clincher, universal quick-detachable or demountable rim. Where speed and not carrying capacity is the big factor, Motz Cushion Tires should be used.

For heavy duty trucks, where load, not speed, is the principal factor, we recommend Motz Solid Tires on DEMOUNTABLE RIMS.

Write for booklet 85. Please mention make and model of your car.

**THE MOTZ TIRE & RUBBER CO.**  
Factories and Executive Offices:  
**AKRON, OHIO**

Branches:—1737 Broadway, New York; 2023 Michigan Ave., Chicago; 999 Woodward Ave., Detroit; 409 E. 15th St., Kansas City; 2352 Euclid Ave., Cleveland.

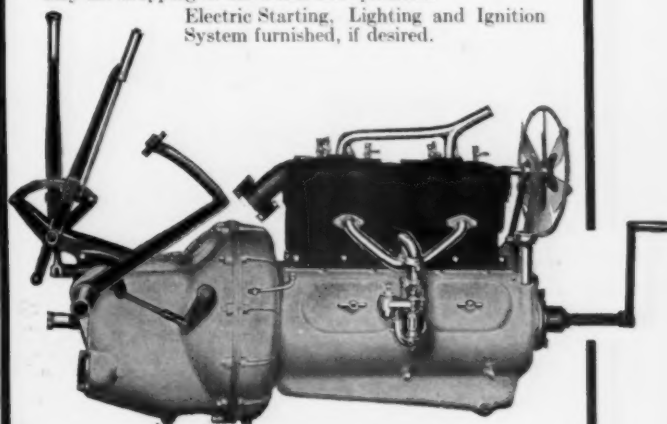
Standard Tire & Rubber Co., 104-106 Portland St., Boston, Mass., Distributors for the New England States.

## THE HAZARD UNIT POWER PLANT

Can be Mounted in Practically Any Truck

All parts of the Power Unit are integral, necessitating only the dropping of the outfit into position.

Electric Starting, Lighting and Ignition System furnished, if desired.



No Time Limit to Our Guarantee  
Full Descriptive Catalog on Request

**HAZARD MOTOR MFG. CO.**  
845 Coates Street, ROCHESTER, N. Y.





As pioneers, we are able to supply any size or type for your purpose

## Atterbury Trucks

THE TRUCKS THAT DELIVER  
THE GOODS!

We carry a complete and satisfactory  
line. Write for details.

**Atterbury Motor Car Co.**  
BUFFALO, N. Y.



## THE W. F. STEWART CO.

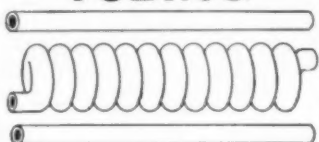
ESTABLISHED 1881 INCORPORATED 1898

FLINT, MICHIGAN

## WE BUILD BODIES

for both pleasure and commercial vehicles, and can give you goods and service that can be depended on. The price, too, will be right. Get in touch with us.

**SEAMLESS  
BRASS AND COPPER  
TUBING**



FOR  
OIL AND GAS  
PIPES

## THE BUFFALO TUBE CO.

ERIE, PA.

Quality

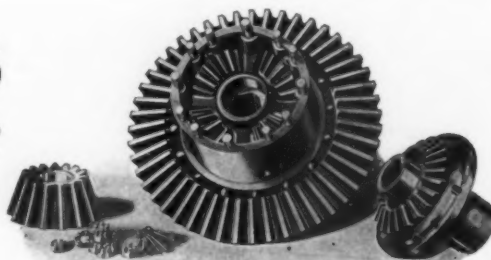
Price

Delivery

*Best in the Business*

## The ROSS Differential Gear

For Commercial  
Trucks



Made in three sizes—for  
trucks of from one to five  
tons capacity.

*Write for Blue Prints*

ROSS GEAR & TOOL CO.

∴

959 Main Street, Lafayette, Ind.

## MERCURY TRUCKS

1000 lbs. Capacity

The result of 10 years' experience proves it not an experiment.

You may as well buy now.

Our product is standard, changes are unnecessary, and there will be no yearly models.

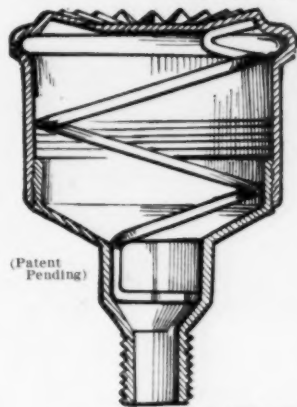
Manufacturers not assemblers.

**The Mercury Manufacturing Company**

4106 S. Halsted Street, Chicago, Illinois

## Why Rack Your Brain

TRYING TO FIND A



## GREASE CUP

WITH A TOP THAT WON'T RATTLE OFF?

*The*

## M. & E. GREASE CUP

IS WHAT YOU WANT

**HERE IT IS**

See the Spiral Wire catching the Corrugations

### HERE ARE THE PRICES

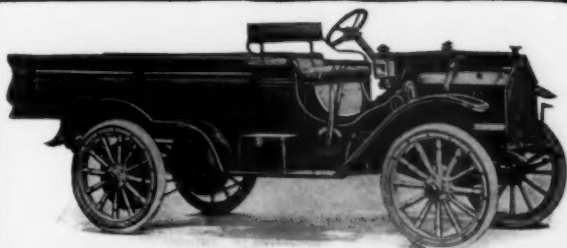
Size	000	00	0	1	2
Shank	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ and $\frac{1}{4}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "
Cap'y GSE	$\frac{1}{2}$ to $\frac{1}{4}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	1	2
Plain Pressed Steel	.25	.30	.40	.50	.60
Plain Pressed Brass	.35	.40	.50	.60	.75
Pol. Pressed Brass	.40	.45	.55	.65	.80

LIBERAL DISCOUNT TO TRADE  
NOW SEND US YOUR ORDERS



**MERCHANT & EVANS COMPANY**  
PHILADELPHIA

New York Brooklyn Chicago Kansas City  
Denver Cleveland Baltimore



## THE LAMBERT MOTOR TRUCK

The first investment is not the most important consideration in the purchase of a motor truck. It is important that you study the construction—what will it cost you in time and money to get like results from different types of cars?

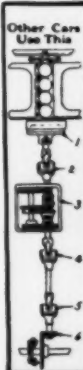
The Lambert Patented Friction Drive will give you more service at less expense than any truck built. This is apparent by studying the illustrations in this advertisement. That on the left shows the usual form of power transmission. That on the right the Lambert Patented Friction Drive. Six expensive complicated units, as compared to two simple components. Granted that the results from the gear transmission are equal to the friction, which is the more economical? The cost of lubricating oil alone in the one on the left, will amount to more than the replacement of parts on the Lambert Friction Drive.

The Lambert is trouble proof, and cannot be damaged by carelessness or inexperience. It overcomes the chief objection to commercial cars.

We have prepared some very interesting literature for you. A card brings it to you.

**The Buckeye Manufacturing Co.**

146 Columbus Avenue  
ANDERSON, INDIANA



Coventry Noiseless Chains as Used  
on "Benz" Engines

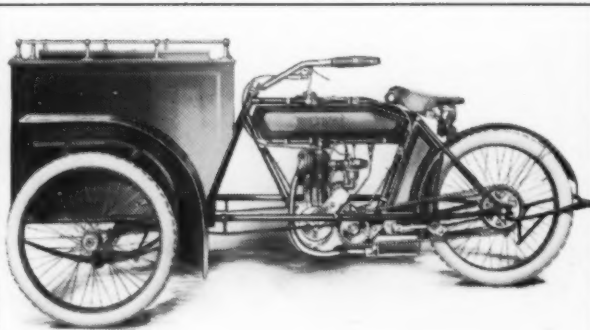
## COVENTRY NOISELESS CHAINS

Have been the standard of Europe for many years. These chains run with remarkable accuracy and precision, their construction and design make them positive and flexible.

Standard equipment on the following cars: Daimler, Deasy, Humber, Maudslay, Benz, Arrol-Johnson, Vauxhall, etc. Write for full description and details.

UNITED STATES REPRESENTATIVES:

Sarco Engineering Co., 110 Broad St., N. Y.



## Minneapolis Light Delivery Cars

Solves Your Light Delivery Problems

**Quick      Reliable      Efficient**

Capacity 300 pounds. Three point suspension unit power plant, 5 H. P. motor, two speed transmission, multiple disc clutch and free engine. Clutch control on handle bar. Simple to operate, and built to give satisfactory service to owners at an expense of **one cent per mile**. Motor can be started while machine is standing. Handles the same as an automobile. Initial cost and upkeep small. Catalog and literature on request. Our traffic department will analyze your delivery problem for you without obligation. Correspondence solicited with dealers in unoccupied territory.

PRICE \$375

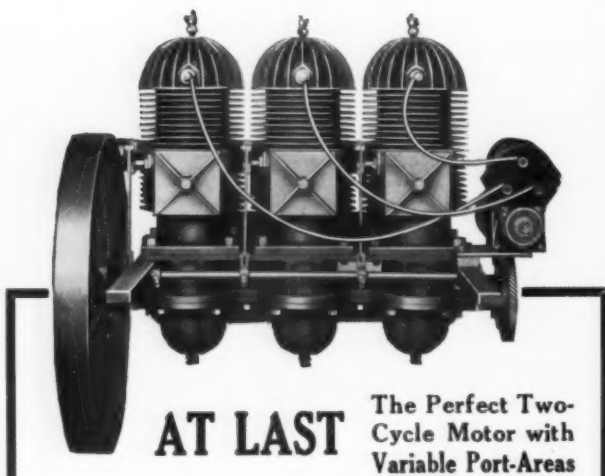
**The MINNEAPOLIS MOTORCYCLE CO., Inc.**  
Manufacturers  
517 South Seventh Street, Minneapolis, Minn.



In England, worm drive for motor trucks is rapidly succeeding other forms of gear reduction. It was an assured success for nearly ten years before its adoption by the makers of the Pierce-Arrow Truck. More than a year's service on the Pierce-Arrow Trucks now assures the success of worm gear drive in America.

## PIERCE-ARROW 5-TON MOTOR TRUCKS

THE PIERCE-ARROW MOTOR CAR COMPANY, BUFFALO, N. Y.



## AT LAST      The Perfect Two-Cycle Motor with Variable Port-Areas

The essential feature of Moore Motors is the increasing or decreasing of all the port-areas simultaneously (fully patented), giving flexibility of control and fuel economy.

(Fixed ports, as in regular two-cycle design, mean lack of flexibility and high fuel consumption.)

The result is a power plant combining two-cycle simplicity and low upkeep cost, with four-cycle flexibility of control and fuel economy.

Moore Motors are backed by years of engineering experience. Send for descriptive circular.

**PALMER-MOORE COMPANY**  
SYRACUSE, NEW YORK

## HAYES HEAVY TRUCK AND PLEASURE CAR WHEELS

Strongest, Most Economical and Safest Wheels Obtainable.

After years of experimenting with all sorts of wheels, the most prominent pleasure and commercial car manufacturers in the Automobile industry now specify HAYES WHEELS on their models. They have found that these wheels meet every requirement necessary in perfect wheel construction and that it is impossible to obtain a better wheel than a HAYES at any price.

A wheel that is the undivided choice of the majority of important manufacturers is worthy of your consideration.

A trial will convince you that our statements are true.

You cannot afford to use a wheel you know nothing about—the experience will prove disastrous as well as expensive.

We have been making wheels for 25 years and if you appreciate quality and a reputation for square dealing, we solicit your wheel business.

Our facilities are unequalled, enabling us to meet every requirement with little delay.

No order too small. None too large.

All orders receive our very best expert attention.

May we be favored with your wheel business for 1912?

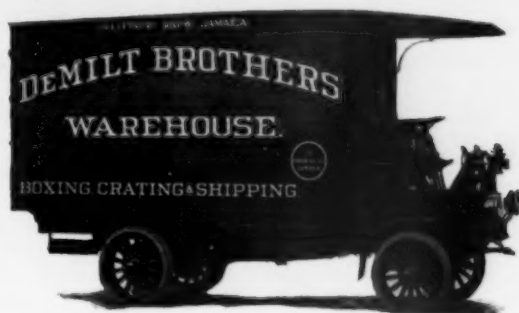
Consult us on your design. Our Engineering force is at your disposal.

Estimates and details gladly furnished on request.

**HAYES WHEEL COMPANY**  
JACKSON, MICHIGAN



## REAL TRUCK SERVICE



You judge of the value of an article to you by the experience of others in your line of business, and by the results which they have obtained by its use.

Conclusions are based upon the word of the man who has tried the particular article and who knows.

We have a lot of letters on file where Gramm owners have gone on record regarding the service the trucks have given them, which we would be glad to show you.

Many of these Gramm owners have backed up their letters by placing repeat orders—no stronger proof of their sincerity could be asked.

Among these letters you will find some that will show what others in your line have accomplished, and the results can be applied to your case as well as to theirs.

*Write us, tell us of the conditions in your particular case, and we will show you how we can help you and save you money.*

### The Gramm Motor Truck Company

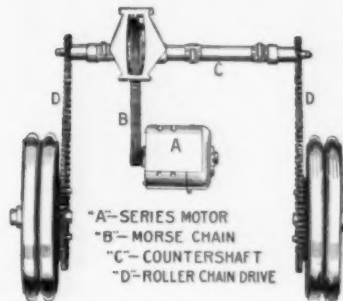
129 South Lima Street  
LIMA, OHIO, U. S. A.

**Exclusive Motor Truck Builders**



## G. V. Electric Trucks

### SIMPLICITY : STANDARDIZATION



This is all there is to the G. V. Power Plant. Compare it with the power plant of non-electric trucks. One *rotating* part against numerous *reciprocating* parts. No gear changing—no clutches. No small parts to wear out and break on the road.

All of the 6 G. V. models are standardized and all parts of each model are *interchangeable* and *accessible*.

Do you wonder that the G. V. Electric has the lowest maintenance cost of any commercial vehicle made?

750 lbs., 1000 lbs., 2000 lbs., 2-tons, 3½-tons and 5-tons capacity.

*Write for catalog 84 and other data*

### General Vehicle Company

*Works and General Offices*

Long Island City, New York

New York	Boston	Philadelphia	Chicago	St. Louis
505 Fifth Ave.	84 State St.	Witherspoon Bldg.	417 The Rookery	Wainwright Bldg.

## Detroit Oilers Prevent Waste

The Detroit Mechanical Force Feed Oiler gives **sure** lubrication under every condition.

In connection with splash systems the Detroit maintains **exactly** the correct level at all times. At every changing speed the right amount of fresh, clean oil is supplied as fast as the oil is used up.

With the oil level in the crank case maintained at the proper height, there is no opportunity for either under-lubrication or over-lubrication.

By preventing over-lubrication the Detroit Mechanical Force Feed Oiler eliminates **waste** of oil and its results—carbonized cylinders, pitted valves, fouled plugs and smoke at the exhaust.

Once properly regulated the Detroit Oiler takes care of itself and needs only an occasional replenishment of the oil supply in the reservoir.

The Detroit Force Feed Oiler gives a **complete** lubricating system for **every** kind of gas engine. It is efficient, economical and sure.

### The Detroit Force Feed Oiler Has No Checks



*The Detroit has no ball checks or check valves, springs or other complicated mechanism to get out of order and clog up. It guards against the damage, waste and expense resulting from faulty lubrication. It makes for GUARANTEED SERVICE.*

Detroit Force Feed Oilers are made in capacities from two pints to five gallons, with from one to thirty feeds—pulley, ratchet, sprocket or gear drive.

They are furnished as standard equipment by many manufacturers of high-grade commercial trucks.

The Detroit catalog tells all about the advantages in design and construction which have made the "Detroit" the standard gas engine lubricator.

**Write today for catalog P-68** and full information, stating in what kind of truck you are interested.

### DETROIT LUBRICATOR COMPANY.

DETROIT, U. S. A.

*Largest manufacturers of lubricating devices in the world.*



## What is YOUR Delivery Problem?

### Consult Our Service Bureau.

Pennsylvania

Motor Service Bureau,  
Review of Reviews Co.,  
New York City.

Gentlemen:

We are seriously considering the advisability of displacing our horses with a motor truck, and would be very glad to have your opinion on the wisdom of such a move.

That you may judge the problem intelligently our transportation situation is this—Our mill is located 10 miles from . . . About half this distance is State macadam, the balance good country roads; these become muddy in spring and fall, but they always have a bottom, and we never experience any difficulty in getting through with our teams.

We figure on a two ton truck, daily trips with capacity loads, and from what information I have at hand it seems to me that it would be a paying proposition if the motor truck has reached a state of perfection that we could eliminate all our horses. We are running one two horse team at present and require additional hauling which costs us 12 cents a hundred, this could be reduced by putting on another team of our own, but would not a motor truck be better and cheaper than two teams?

Any information you may be able to give us will be very deeply appreciated and strictly confidential.

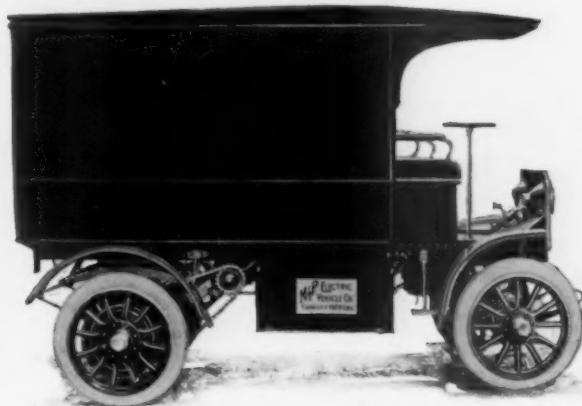
Very truly yours,

We gladly give information free of charge.

## The Review of Reviews Magazine

30 Irving Place, New York City





## The First Electric Truck at a Popular Price

*"Standard in Every Detail"*

**T**HE solution of your delivery problems and expenses. A car of simplicity, few moving parts, and a minimum up-keep cost. Built with materials of finest quality made by the best-known manufacturers. Your delivery problems warrant your investigating the M & P Commercial Car.

Chassis, including driver's seat	- - \$1450	F. O. B. Cars
Open express body	- - - \$1500	Detroit
Closed body	- - - - \$1600	

Body blue prints, specifications and catalogue upon request.

**M & P ELECTRIC VEHICLE CO.**  
FRANKLIN AND DUBOIS STREETS, DETROIT

## COMMERCIAL CAR

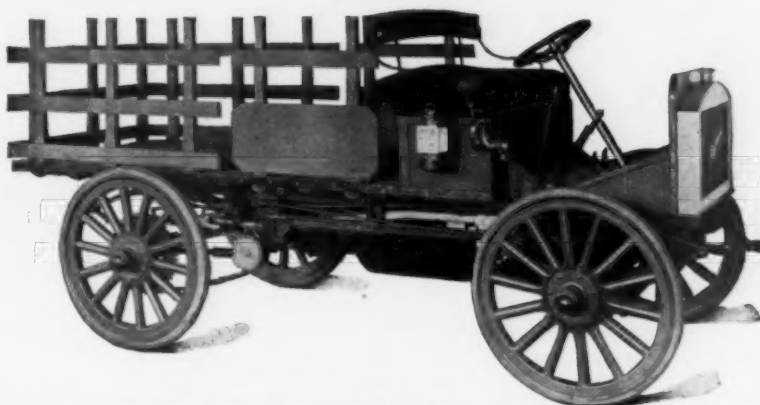
IS STAMPED ON  
EVERY PART  
AND, PARTICLE

OF THE *"Little Giant"*

Not in visible letters but in the MARKS OF QUALITY; in the SIGNS OF STRENGTH; in the SUBTLE INDICATIONS of fitness for the purpose intended

CAPACITY  
ONE TON

EIGHT  
STANDARD  
TYPES  
OF BODY



SEND FOR  
BOOKLET  
No. 96  
"The Heart  
of the  
Little Giant  
Commercial  
Car"

**CHICAGO PNEUMATIC TOOL COMPANY**  
1010 FISHER BLDG. CHICAGO  
BRANCHES EVERYWHERE  
50 CHURCH ST. NEW YORK



# THE VITAL QUESTION

in the adoption of commercial vehicles is  
SERVICE PLUS LOW MAINTENANCE COST

Tires are the largest upkeep cost item

# ARIES TRUCKS

(BUILT IN FRANCE)

are equipped with steel tired wheels (note illustration below),  
which wheels we guarantee to give

## 60,000 MILES SERVICE

*The President of the Welz & Zerweck Brewery, Brooklyn, N. Y.,  
writes us as follows:*

"If our motor truck equipment in the beginning had been composed wholly of Aries steel shod trucks it would have saved us many thousands of dollars, as we have found by experience that the most important item of expense in the upkeep of trucks is rubber tires."



*One of the Four Seven-Ton Aries Trucks in the Service of  
C. & J. Fanteuzzi, Puerto Rico*

*Investigate ARIES Trucks (types one to seven tons) before purchasing and be  
benefited by the experience of others*

## J. JACCARD & CO.

213 West 69th Street  
NEW YORK CITY

# SHELDON

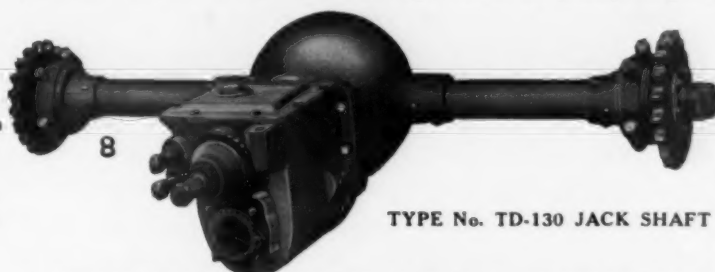
## ONE TON EQUIPMENT

It's Ready For You



When we say this equipment is ready, we mean it has been thoroughly tried out, and that we are in a position to accept orders for prompt shipment.

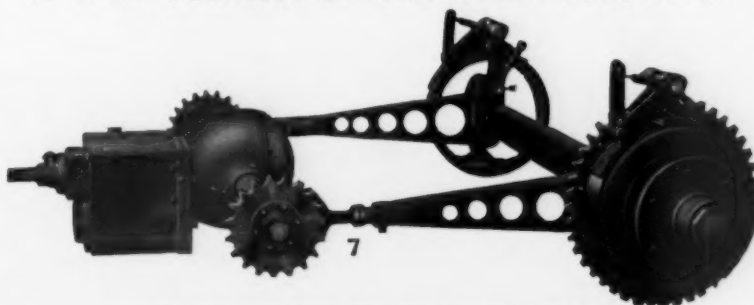
Radius  
Rods  
Designed to  
take care  
of all  
operating  
conditions



TYPE No. TD-130 JACK SHAFT

14 inch  
Brakes.  
Pressed  
Steel  
Drums,  
with  
sprockets  
riveted on

A VERY COMPACT SUBSTANTIAL PROPOSITION



BRAKES AND RADIUS ROD EQUIPMENT D-132

Our One Ton Front Axle is I-Beam style with spring pads forged integral. Rear Axle also has integral spring pads.

We furnish a standard set of springs to go with this One Ton Equipment.

Order Axles, Jack Shaft, Transmission, Brakes, Radius Rods and Springs all from one source—one shipment.

*Our Bulletins Give Facts Worth Getting*

### SHELDON AXLE COMPANY

WILKES-BARRE, PA.

Branch Office  
68 East 12th Street  
CHICAGO

Branch Office  
1215 Woodward Avenue  
DETROIT





## Efficiency and Durability in Truck Axles and Countershafts

The almost universal use of Weston-Mott axles is certainly sufficient proof of their superiority. In thousands of cars they are today giving the most perfect satisfaction.

A countershaft, type 850L, modeled especially for use on commercial trucks, is shown below. This is for trucks ranging in weight from one to three thousand pounds. A study of its construction will show you why it is so efficient.

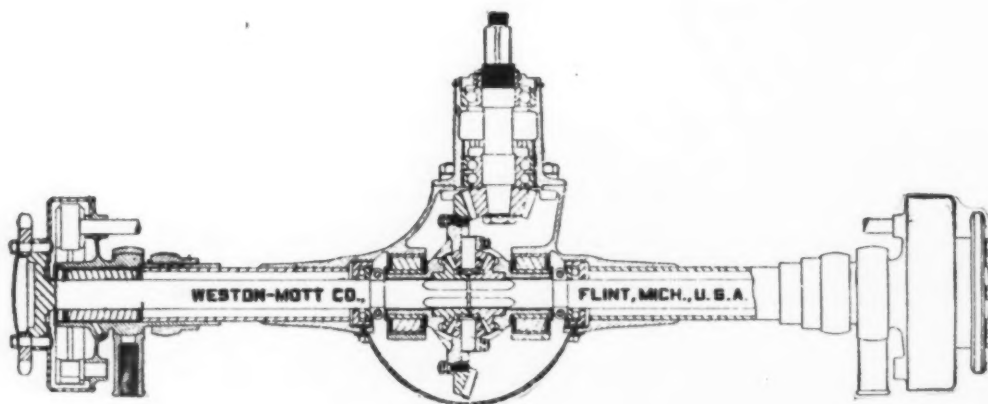
The design is the most advanced—representing the very latest ideas in motor car building. All materials used are the very highest quality that can be secured.

The Weston-Mott plants are the largest and oldest in the world, devoted exclusively to auto-

mobile axles and axle accessories. For nearly thirty years the name "Weston-Mott" has stood for the highest quality both in axle, workmanship and materials.

All materials used must stand the most rigid tests possible. The steel must show certain tensile strength as well as chemical purity. There are no unexpected weak spots to Weston-Mott products. The engineering department is one of the most complete in the entire country.

When you have adopted a "Weston-Mott" product on your car you have the best that can be secured. If you want your car to give the greatest efficiency and absolute reliability you should write for complete information.



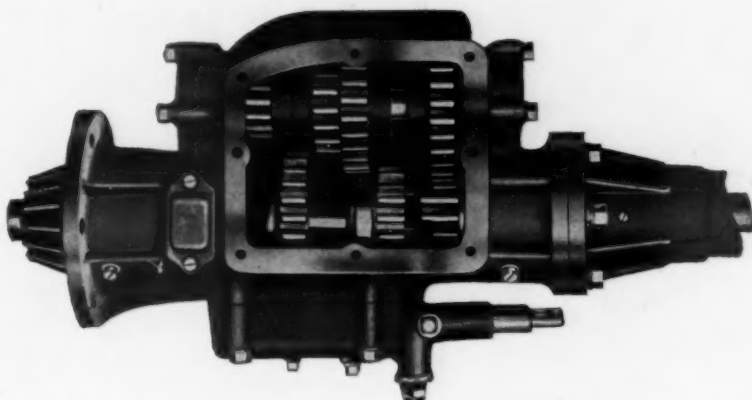
### Weston-Mott Company

Oldest, Largest and Most Efficient Manufacturers of Automobile Axles, Hubs and Rims  
Established 1884

FLINT, MICHIGAN



# COVERT



**B**uilders of the best Motor Trucks recognize that, by using certain standard parts, and concentrating their efforts on improving the remainder of their product, they can produce a better car—sell it for less money—and receive a greater profit themselves.

And when these shrewd, careful business men are deciding upon transmissions, they invariably select the **Covert Transmission** because they know there is none better.

Covert Transmissions are not built upon new, untried principles. Their present high state of excellence is the result of years of experience in building transmissions for all types of motor cars.

It is obvious that a large factory and organization which devotes its greatest efforts to making transmissions alone, can make a better transmission than can a single department in your factory.

Let us have the opportunity of figuring with you.

## COVERT MOTOR VEHICLE COMPANY

Sales Office: Ford Building, Detroit, Mich.

Factory: Lockport, N. Y.



(Full size.) Patented in America and Europe

# More Power with Less Gasolene

**The M & M Economizer Is Made for Getting More Power with Less Gasolene**

Cooling your engine.  
Lubricating the cylinders.  
Saving about 40 to 50% of gasolene.  
Saving the brakes.  
Prolonging the life of the batteries.  
Saving your clutch and gears.  
Giving you control over your car.  
Safety valve in case of back-firing.  
Saving the electric current.  
Making hill climbing easy.  
Making crowded streets and rough roads easy.  
Service and economizing.

The M & M is made with two valves: One for POWER WITH LESS GASOLENE, and One Valve for COASTING.

## Mr. Truck Owner:

We can decrease your expenses and increase your profits. Won't you let us prove it? Requires no adjustment after being properly fitted on car.

No truck or automobile complete without it. By the use of the M & M CONTROLLER AND ECONOMIZER accidents can be avoided, and your car under absolute control at all times.

Simple to attach. Any garage or machine shop can install it on short notice at trifling expense.

Discounts to dealers and repairmen.

Act at once! Remember, while you are thinking about giving us your order for one of these M & M ECONOMIZERS you are losing money by thinking. Don't think—give us your order at once.

The M & M goes on the intake pipe and is operated by the foot pedal—uses no gasolene whatever going down grades.

What the coaster brake is to a bicycle the M & M is to the automobile.

Patented in United States and Europe.

**PRICE, COMPLETE, \$3.50 AGENTS WANTED**

Money refunded if the M & M will not do all we claim

**Moller Bros. Controller & Economizer Co., 700 Betz Bldg., Phila., Pa.**

*"Better late than never" is  
an old saying; "but better  
early than late" is the  
modern truism  
J. H. G. & Bro. 5/1/12*



Gibney Single

# GIBNEY

## The Three-Years-Ahead Tire



Gibney Dual

### THREE YEARS AHEAD!

In 1909 we introduced the GIBNEY type of tire, which quickly proved its superiority. To-day most all tire makers are advocating this style of tire. Possibly you think that we make frequent reference to the fact that the GIBNEY type of tire is three years ahead of the times. We are justified in doing so, as it is a vindication that while we alone were willing to introduce and push this style of tire, we were nevertheless right, because universal imitation is proof of our claims.

A few more words from one of our many satisfied users. We hope some day to publish a letter from you in this column. If maximum tire service counts for anything, we will have that letter:

Extract from letter dated Nov. 10, 1911:

*" . . . Your twin tires have given us very satisfactory service, lasting from nine months to a year. We are having a new 5-ton truck built which will be equipped with GIBNEY TWIN TIRES."*

(Signed)

JOHN LANG PAPER CO.,  
Philadelphia.

### Minimum Up-keep Cost

THE commercial car of to-day is a commercial proposition and must be considered as such by every buyer. As one of the chief items of expense is tires, one of the chief items of consideration is tires. If we can demonstrate to you that the Gibney Tire will give you greater mileage at less cost than any other make, you will want Gibney Tires. We can demonstrate this fact; hence we ask you to write us stating your requirements and we will proceed to give you prices and facts.

## JAMES L. GIBNEY & BRO.

213 N. Broad Street, Philadelphia

248-52 W. 54th Street, New York



J-2002-1



J-2002-1

## NO TIME LIMIT ON THE GUARANTEE

### Have You Investigated?

**E**VERY agent who has investigated the Lincoln Motor Wagon has closed a contract. These agents are old at the business, and think more of their established trade than anything else. They constantly have their finger on the pulse of the buying public, and are in a position to know. Hear what they say:

"I can sell 100 this season." "Your Lincoln Motor Wagon is the one I can do business with." "My customers want this wagon." "The price is right."

We build these cars to give service. They are strong, handsome in appearance, simple in construction, reliable, and money savers in point of upkeep.

**\$575.00 TO \$785.00**

500 Pounds to 800 Pounds Capacity. Panel top or open express bodies.  
Solid or Pneumatic tires. Agents wanted in open territory. Write for terms.

**LINCOLN MOTOR CAR WORKS**

1349 W. Harrison St., Chicago, Ill.



## Ball Bearing Engineering

is not a fixed, unalterable thing. Conditions change, and designs change with them. The methods of mounting used last year may be superseded by better ones. To be up to date, the one sure way is to keep in constant touch with the manufacturers

We have issued about 80 9" x 12" "Data Sheets" of ball bearing applications of all kinds. These are kept up to date by frequent revision. They will be sent without charge to any motor vehicle engineer on request. Write on the stationery of your company.

The Hess-Bright Manufacturing Company

2128 Fairmount Ave., Philadelphia, Pa.



## Two New Delivery Cars

### Model 59

These delivery models carry bodies of ample dimensions. Each is handsomely finished and has a carrying capacity of 800 pounds. The "Special" is accessible by two large doors at rear, extending full height.



MODEL 59 DELIVERY  
"SPECIAL." PRICE, \$1000

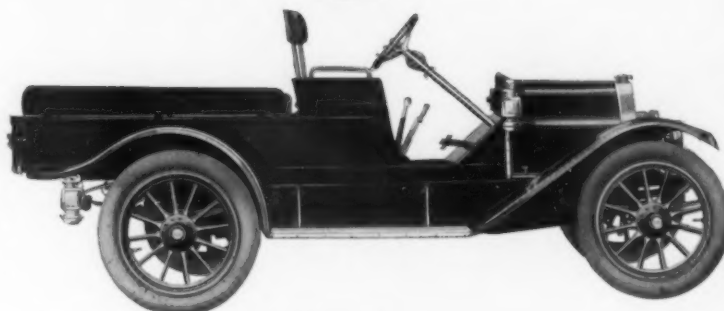
#### BODY SPECIFICATIONS

Length of floor - - - 60"  
Width of floor - - - 43"  
Height from floor to top - 53"  
Tires - - - - 33" x 4"  
Color: Maroon with black trimmings.

MODEL 59 DELIVERY  
"EXPRESS." PRICE, \$950

#### BODY SPECIFICATIONS

Length of floor - - - 67"  
Width of floor - - - 42"  
Height of side - - - 10"  
Width of side wings - - 6"  
Tires - - - - 33" x 4"  
Color: Overland blue with gold trimmings.



### Specifications of Chassis

Wheel Base—106 inches.

Tread—56 inches.

Motor—4 x 4½.

Horse-Power—30

Transmission—Selective, three speeds and reverse.

Clutch—Cone.

Ignition—Dual, Splitdorf magneto and batteries.

Brakes—On rear wheels, 2 inches wide, 10-inch drums, internal expanding, external contracting.

Springs—1¾ inches wide, semi-elliptic front, three-quarter elliptic rear.

Steering Gear—Worm and worm gear adjustable, 16-in. wheel.

Front Axle—Drop forged I-section.

Rear Axle—Semi-floating.

Wheels—Artillery wood, 12 1½-inch spokes, 12 bolts each wheel.

Frame—Pressed steel.

Finish—Overland blue.

Equipment—Three oil lamps, two gas lamps and generator.

Tools—Complete set.

Write for a catalogue. Please ask for Book N45

The Willys-Overland Co.

Toledo, Ohio





# The Road-Proof Varnish

The mud filled with ammonia, the road oil, the "sand blast" have always soon destroyed any varnish ever put on a car until this year.

There is now a remedy.

## VANADIUM CHASSIS FINISHING

withstands all these deadly enemies of varnish.

It also defies soapy water, the varnish destroyer in the garage. It is the only varnish that does.

The hoods, fenders and all the underparts of the car retain their fresh, handsome appearance five to ten times as long when finished with this varnish as with any other ever made.

**Mr. Car Owner:** Request that Vanadium Chassis Finishing be used on your car. It will stay new-looking for many months longer.

**Mr. Auto Painter:** Use Vanadium Chassis Finishing—every car finished with it will send some other car to your shop.

**Mr. Car Manufacturer:** There is no other one small item of extra cost that will do so much to make your car popular as will a permanent finish with Vanadium Chassis Finishing.

One quart of Vanadium Chassis Finishing costing \$1.25 is enough for a medium-sized car. It will outwear \$5.00 worth of any other varnish—not to mention the extra cost of doing the job three or four times with anything else.

*Send \$1.25 for a trial new finish for a car*

## Valentine & Company

456 Fourth Ave., New York    343 S. Dearborn St., Chicago    74 Pearl St., Boston

TRADE **VALENTINES** MARK.



MACK



COMMER



SAURER



## POLACK MOTOR TRUCK TYRES



GARFORD



SAURER



GENERAL VEHICLE

Try Polack Tyres on your Electrics and note the saving in current consumption.



PIERCE-ARROW

Will prove conclusively by a few frank comparisons that they are incomparably the cheapest in use; the most resilient; the tyres which give the greatest amount of effective service under all conditions of usage.

Send for booklet and latest price lists.

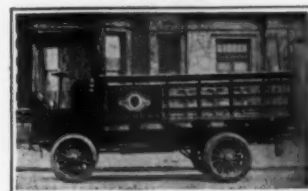
## POLACK TYRE COMPANY

Main Offices:

Ehret Bldg., Broadway and 59th St.  
New York City

BRANCHES:

146 Summer St., Boston, Mass.  
1004 Michigan Ave., Chicago, Ill.  
247 Jefferson Ave., Detroit, Mich.  
512 Mission St., San Francisco, Cal.  
516 Parkway Building, Philadelphia, Pa.  
505 Liberty Ave., Pittsburgh, Pa.  
917 First Ave., So. Minneapolis, Minn.  
930 South Main St., Los Angeles, Cal.



ALCO

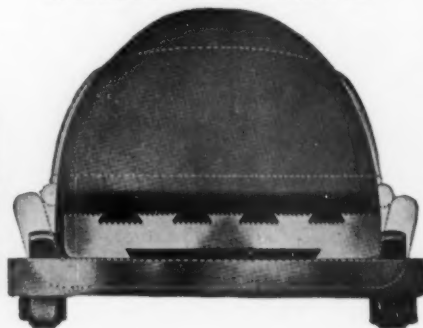


PACKARD

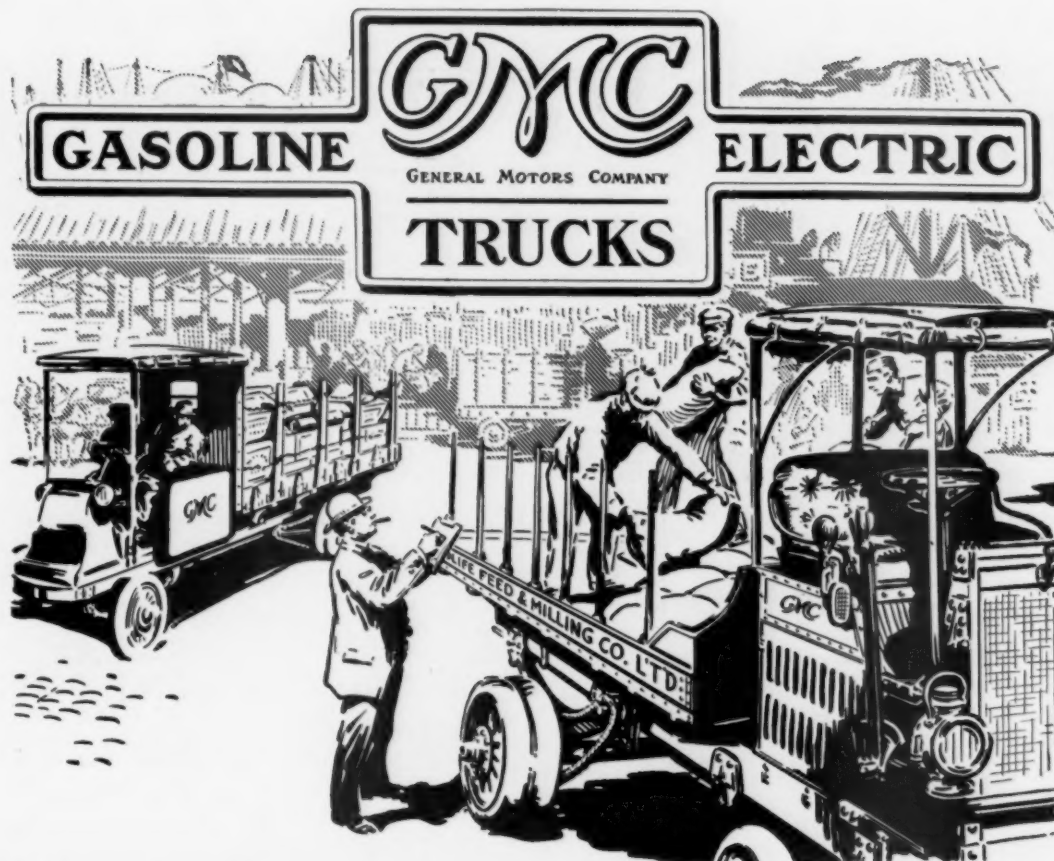


GRAMM

Try Polack Tyres on your Gasoline Trucks and note the saving in repairs.



COMMER



## Standardized motor truck equipment

Modern "good business" system demands standardization because *standardization* means *simplification*—the straight road to efficiency and economy.

General Motors Truck Company is the *first* to standardize trucks by building both gasoline and electric types in capacities from 1000 lbs. to 6 tons.

As a truck user, or as a prospective buyer, whose business requirements may demand trucks of varying capacities, realize what truck standardization means.

You deal with *one* responsible manufacturer—the largest in the world.

The immense financial resources of GMC *guarantee its future*—and protect your trucks for "service" and replacements for years to come.

A "service" department at command night or

day for quick replacements or emergency chassis.

Familiarity of caretakers and drivers with *one* line of trucks.

Constant inspection and reports to keep you posted on the exact condition of your machines.

Compare such standardized truck equipment with haphazard buying—light gas trucks from one maker, heavy gas trucks from another and electrics from a third.

Realize the *vital importance of these facts*. Consider them carefully, and *know yourself* what GMC equipment means to you.

Let us render *pre-sale* service that entails neither cost nor obligation, and will thoroughly analyze your hauling problem.

Both the gasoline and electric catalogs are instructive as well as interesting. They will be mailed upon request.

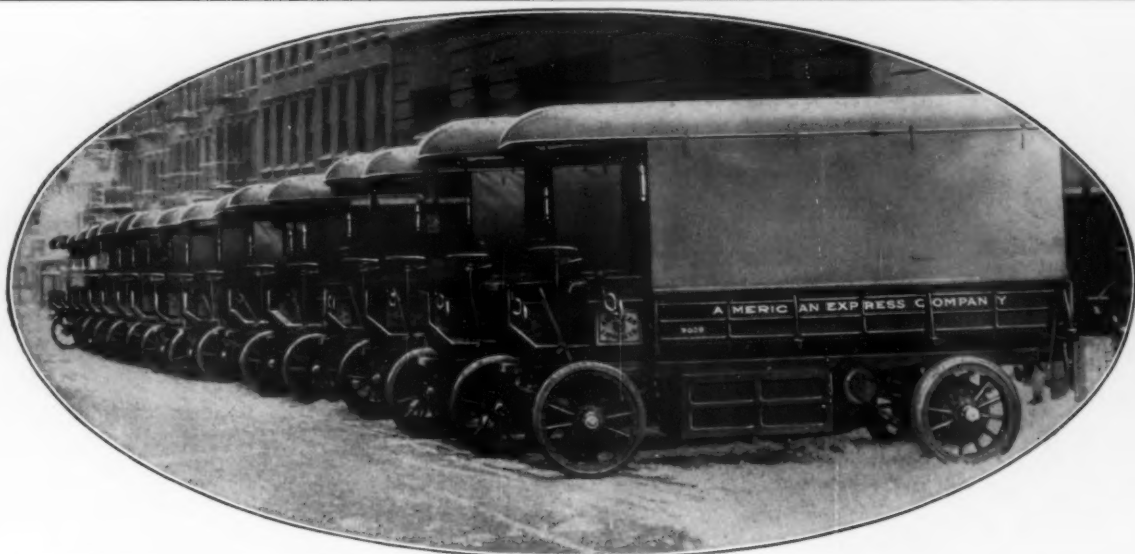
Correspondence from prospective purchasers and dealers is invited.

## GENERAL MOTORS TRUCK COMPANY

DETROIT, MICHIGAN

Branches: New York, Chicago, Boston, Philadelphia, Kansas City, Detroit





*One of the Fleets*



## Large Transportation Interest Buys **-80-** Baker Electric Trucks

Fleets of Bakers have been ordered for Express service during the past year, based entirely on their superior construction and efficiency in city work. A three year test by transportation experts resulted in selecting the highest-grade electric vehicle made in this country--the Baker.

### The Unusual Efficiency of the Baker Chassis

is due to correct design and a high degree of engineering refinement, as instanced by such details as imported annular ball bearings on the countershaft; hardened and ground spring shackle bolts; Renold silent chain running in oil, dust proof; hardened and ground pins, bronze bushed, for articulating joints; exact machining of parts, and a number of other exclusive features of superior design.

**The Baker Motor-Vehicle Company** Commercial Car Department

72 West 80th Street, Cleveland, Ohio

Dealers in Leading Cities

*Oldest and Largest Manufacturers of Electric Vehicles in the World*

# The Real Test of Truck Tires

## The Real Test of Truck Tires

is not service on smooth, well kept main thoroughfares—the real test is service around warehouses, depots, terminals and wharves where pavements are always at their worst.

Diamond Wire Mesh Base (Spliceless) Truck Tires are built to *give Mileage and Service under all conditions.*

A rugged tire that absorbs and distributes the terrific shocks of the impact of a heavily loaded truck on the roughest pavements—and the only solid tire that does so.

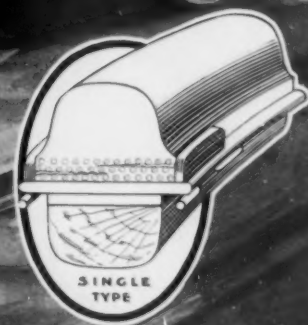
A one-piece (Spliceless) tire, correct in design, and the largest selling solid rubber motor truck tire in America—that's the Diamond Wire Mesh Base Truck Tire.

*Write for our book "The Profit Side of a Motor Truck."*

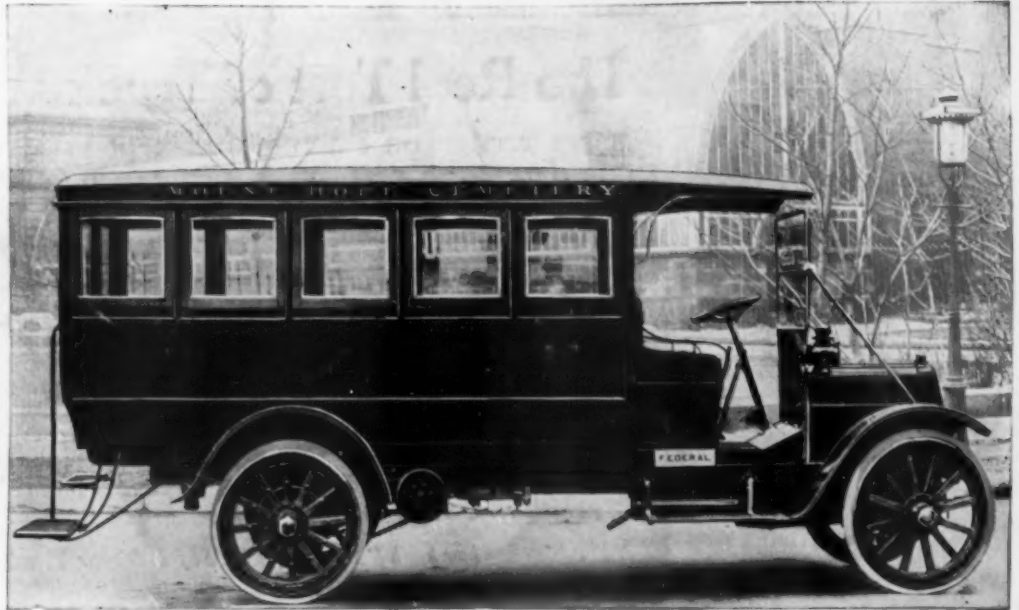
**The Diamond Rubber Company**

AKRON, OHIO

**Diamond  
WIRE MESH BASE  
TRUCK TIRES**



# WHEREVER QUALITY COUNTS



*A Federal Omnibus in operation at Mt. Hope Cemetery, Chicago. Capacity, eighteen passengers*

Federal one-ton chassis, including seat, \$1800. Body type at purchaser's option. Wheelbase, optional, 110-inch or 144-inch. Motor, 4-cylinder, 30 horsepower; Magneto, high-tension; Clutch, 16-inch cone; Transmission, three speeds forward and reverse; Hyatt high-duty bearings; Tires, solid, 36 x 3 1/2-inch front and 36 x 4-inch rear.

**This Demonstrates Again the Versatility  
as Well as the Unequalled Efficiency of**

## THE FEDERAL

**The Logical Choice for Every Service, the  
Logical Solution of Every Transportation Problem**

The Directors of Mt. Hope Cemetery selected the Federal from a score of trucks to perform this service—

**ONE-TON TRUCK**  
**\$ 1 8 0 0 . 0 0**

And at the same time, buy a one-ton 'bus that is the acknowledged standard of efficiency, reliability and economy in gasoline transportation.

**BECAUSE—**

The Federal chassis is rigid, staunch and, with the 144-inch wheelbase, has a short turning radius.

**BECAUSE—**

The Federal motor is powerful, durable, reliable and economical.

**BECAUSE—**

The Federal—at \$1800—is pre-eminently the cheapest as well as pre-eminently the best standard one-ton truck on the market.

The directors of Mt. Hope Cemetery, shrewd, conservative business and professional men, realized that by buying a Federal 'bus they could save between \$400 and \$500 for their stockholders.

To the merchant and manufacturer who have delivery problems we can offer no better argument than this testimony of the Directors of Mt. Hope Cemetery.

Today the Federal at \$1800 leads all one-ton trucks by a year in price, excellence and reputation.

Our huge new factory, the huge demand for Federal trucks, the pre-eminence of the Federal have confirmed the soundness of Federal principles and ideals.

And the results of our success go back into the Federal one-ton truck.

With every Federal goes a guarantee of a maximum service and quality for a minimum of investment and up-keeping cost.

**Federal Motor Truck Company** New Factory, Dept. A **Detroit, Mich.**  
Leavitt and Campbell Avenues